



North Carolina Department of Environment and Natural Resources
Division of Waste Management

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August 26, 2009

Ms. Carolyn Callihan
Superfund Site Evaluation Section
US EPA Region IV Waste Division
61 Forsyth Street SW, 11th Floor
Atlanta, GA 30303

Subject: Douglas Battery Mfg Co.
NCD 003 213 030
Winston-Salem, Forsyth County, NC
Site Re-Assessment (SRR) Report

Dear Ms. Callihan:

The following is a Site Re-Assessment Report (SRR) completed by the NC Superfund Section at the Douglas Battery Site in Winston-Salem, Forsyth County, NC. The purpose of this investigation was to re-evaluate the threat posed by this site to human health and the environment and to determine the need for additional action under CERCLA/SARA. Based on the re-assessment results, the NC Superfund Section recommends that this site's No Further Remedial Action Planned (NFRAP) status remain unchanged.

This site re-assessment was prompted by 1) an acid spill reported by the facility in February 2009, and 2) concerns over possible surface water and soil exposure pathway hazards resulting from historical site operations. The scope of this investigation included a review of previous CERCLA investigation reports and a recent EPA Pollution Report (POLREP). Aerial photographs and field reconnaissance were used to characterize surface water and soil exposure pathway receptors near the site. On May 11, 2009, NC Superfund Section and EPA Emergency Response and Removal Branch (ERRB) personnel visited the site and used X-Ray Fluorescence (XRF) to screen neighborhood residential soil and downstream sediment for lead contamination.

Site Location, Operational History and Waste Characteristics:

The site is located at the west end of Battery Drive in Winston-Salem, NC. Site geographic coordinates are 36° 03' 33" (36.0592°) north latitude by 80° 14' 05" (80.2347°) west longitude (Refs. 1-3 ; Fig. 1; Fig. 2A).

The active Douglas Battery manufacturing plant is currently approximately 13 acres in size. It is bordered by Starlight Drive and Interstate 40 to the north, by a railroad grade to the west, by a commercial park to the south, and by vacant property and Middleton Street to the east (Ref. 3; Figs 2A-3B).

The city block east of the site's northern portion is located between Battery Drive, Middleton Street, Starlight Drive and Old Lexington Road (Fig. 2A). This block contains three residential properties (two are occupied) and leased commercial properties used for book sales and for automotive repair and service (Ref. 4; Ref. 5). Douglas Battery owns the remaining vacant parcels on this block, and the two vacant city blocks on the south side of Battery Drive (Ref. 3; Fig. 2A; Fig. 3A). These properties contained houses which were removed during the 1980s (Ref. 1; Ref. 6). The neighborhoods east of Old Lexington Road and north of Interstate 40 are mixed commercial and residential (Ref. 3).

The Winston Lead Smelting Company opened on site in 1919. The Douglas family manufactured lead-acid batteries on site from the 1930s until the present. The facility's lead-smelting operation closed in 1969. Upon closure of the smelter, approximately 2100 cubic feet of waste flue dust was disposed on site and covered by a paved parking lot ("Site A"). In addition, approximately 120,000 cubic feet of crushed battery casings underlies the main manufacturing building ("Site B") (Ref. 1; Fig. 2A). The US EPA reported that acid lagoons formerly operated on site but were backfilled. The lagoon locations and dates were not specified (Ref. 2).

Douglas Battery's manufacturing building occupies the southern portion of the plant property and was the facility's original structure (Ref. 7; Fig. 2A). During the 1960s the manufacturing building was enlarged, covering an area to the southeast that had previously contained a small pond (Ref. 6). During the building's construction, french drains were installed to collect groundwater seepage from an adjacent property to the west. This groundwater was discharged by permit to the Winston-Salem municipal sewer system (Ref. 1; Ref. 5).

The commercial park south of Douglas Battery Mfg Co. is the former Western Electric Co., Inc. Lexington Road Plant (NCD 003 213 907). Western Electric manufactured telecommunications equipment there from the 1950s until approximately the 1990s. The EPA investigated this site in 1990 but referred it to the Resource Conservation and Recovery Act (RCRA) program (Ref. 18). AT&T reportedly purchased the facility and later discovered chlorinated solvent contamination in soil and groundwater there. AT&T installed down-gradient monitoring wells near the Douglas Battery property line (Ref. 5).

Surface runoff from the former Western Electric property flows into a cement-lined trench that runs north beneath Douglas Battery's main manufacturing building. The trench joins a subsurface storm drain, which discharges to intermittent surface water through a culvert beneath the railroad west of the facility (Ref. 5; Fig. 2A).

Permit and Regulatory Status:

The site is an Active Large Quantity Generator under the federal Resource Conservation and Recovery Act (RCRA). The site holds (non-major) permit # NCG030081 under the National Pollutant Discharge Elimination System (NPDES). The facility's annual discharge of lead to surface water ranged from 58 to 600 pounds during the period 1998 to 2007 (Ref. 8).

In February 2009, an underground sulfuric acid pipeline ruptured at the facility, causing surface spills in its paved parking area and manufacturing building. Douglas Battery notified state and county emergency management officials and the EPA National Response Center. Douglas Battery chemically neutralized the acid spill, replaced the broken line and excavated the affected soil (Ref. 2; Ref. 9).

Previous CERCLA Investigations:

In July 1981, upon receiving CERCLA notification of on-site waste disposal, the NC Division of Health Services (DHS) recommended that Douglas Battery install monitoring wells on site. Reportedly, no wells were installed (Ref. 1).

In 1984 the DHS conducted a preliminary site investigation. The DHS sampled Douglas Battery's former production well, which reportedly had not been used since approximately 1970. No lead was detected in the groundwater sample. Surface water and sediment samples were collected up gradient from the main manufacturing building and down gradient from the railroad culvert west of the property. Samples were analyzed for extractable and total aluminum, cadmium, chromium, iron, lead and mercury. The downstream surface water sample contained elevated aluminum and lead concentrations (Ref. 1). The lead concentration exceeded the 0.025 mg/l limit presently designated by the State of NC for Class C surface water (Ref. 10). Sample results were as follows:

Sample	Total Lead (ppm)	Extractable Lead (ppm)	Total Aluminum (ppm)	Extractable Aluminum (ppm)	pH
Former production well	< 0.03	NA	0.1	NA	6.4
Upstream water	< 0.03	NA	0.1	NA	5.9
Downstream water	0.12	NA	0.4	NA	6.7
Upstream sediment	65	< 0.1	2160	0.3	7.2
Downstream sediment	93	< 0.1	4980	0.2	6.9

Waste/Source Sampling:

No source or soil analytical sampling was conducted during either the 1984 sampling event or during this current investigation. However, in May 2009, surface soil XRF screening for metals was conducted on land parcels east of the Douglas Battery facility (See Soil Exposure Section below). During the current investigation, Douglas Battery representatives reported that remnants of battery casings were frequently encountered during subsurface construction excavation beneath the facility (Ref. 5).

Groundwater Pathway:

The groundwater pathway was not evaluated as part of the current investigation. According to the 1984 site investigation report, the entire neighborhood near the site was connected to municipal water lines, and no water supply wells operated within a one-mile radius from the site (Ref. 1). Nearby CERCLA site investigations (Refs. 11-12) indicated that Winston-Salem's municipal water service area included the entire two-mile radius from Douglas Battery's location. Municipal/County water sources are not threatened by the site; they include water intakes on the Yadkin River, and Salem Lake, located eight miles southwest and three miles northeast, respectively (Refs. 12-14).

Surface Water Pathway:

Storm water runoff from Douglas Battery flows through a railroad culvert and discharges to an intermittent stream on the west side of the property. This stream flows 0.25 mile north to a second culvert which passes beneath Starlight Drive. Stream flow continues 0.25 mile northwest, then emerges from a highway culvert on the northwest side of the I-40/US 52 highway interchange. The outflow discharge to perennial Parkway Branch represents the probable point of entry (PPE) to the site's 15-mile surface water pathway (Ref. 5; Figs 2A-2B).

Most of Parkway Branch runs parallel and adjacent to Interstate 40. Parkway Branch is not readily accessible downstream from the PPE due to highway embankments, underground culverts and heavy vegetation along the stream channel (Ref. 5). Parkway Branch joins Salem Creek 2 miles west of the PPE. Salem Creek flows primarily through a vegetated lowland, bordered by suburban and semi-rural upland. The Salem Lake reservoir is located several miles upstream from the surface water pathway. Salem Creek flows southwest approximately 6.75 miles to join Muddy Creek. Muddy Creek flows 5.25 miles to the Yadkin River, in which the 15-mile surface water pathway ends after an additional 1.0 mile (Refs 11-15; Fig. 1). No surface water intakes operate within 15 miles downstream from the site (Refs. 11-14).

A background segment of Parkway Branch lies upstream from the PPE, on the north side of the I-40/US-52 interchange. This background section receives surface runoff from a paved area, the former parking lot of a textile mill which historically operated to the north (Ref. 5; Ref. 7; Fig. 2B). The textile mill was replaced by a school which uses the paved area for supervised student recreation. The paved area is partially fenced and its road access gated and locked to restrict public access. NC Superfund Section personnel observed no evidence of fishing or other activity near the PPE, except for graffiti on the nearby highway culvert (Ref. 5).

Based on previous CERCLA investigations, the nearest downstream fishery is located on Salem Creek, below the city's wastewater treatment plant and approximately seven miles from the site (Ref. 12). The nearest downstream wetland is a 0.19-mile interval of frontage located approximately one mile farther downstream (Ref. 11; Ref. 15; Fig. 1).

On May 11, 2009, NC Superfund Section personnel visited the site to conduct soil and sediment field screening for lead contamination attributable to historical site operations. A sediment sample (Location 40, Fig. 2B) was collected from the intermittent stream, approximately 30 feet below the storm water culvert, west of the facility. Following dewatering, the sample was field screened twice using a Niton X-Ray Fluorescence (XRF) meter. The XRF lead concentrations were 180 and 212 mg/kg, respectively (Ref. 5; Attachment 1).

Three additional sediment samples were collected and field-screened near the PPE on Parkway Branch. Two of the samples (Locations 1 and 3) were collected on Parkway Branch upstream from the PPE; a PPE sample (Location 2) was collected between the highway culvert (from the site) and Parkway Branch. Two XRF screenings were performed on each sample. XRF lead results for the two backgrounds were three non-detections and one reading of 12.5 mg/kg. The PPE sample produced lead results of non-detect and 38.0 mg/kg, respectively (Ref. 5, Attachment 1).

Douglas Battery Mfg Co. personnel provided NC Superfund Section personnel with copies of monthly storm water monitoring data from December 2008 through April 2009, as reported to the NC Division of Water Quality. Downstream aqueous lead concentrations exceeded upstream for each data set, ranging from 0.372 mg/l to 4.04 mg/l (Ref. 16). The downstream storm water results also exceeded 0.025 mg/l, the current State standard for lead in Class C surface water (Ref. 10).

Soil Exposure Pathway:

On May 11, 2009, NC Superfund Section personnel conducted field screening of lead concentrations in surface soil adjacent to the Douglas Battery Mfg Co facility. The purpose of the screening was to determine whether soil lead concentrations in the general downwind (east) direction from the plant exceeded soil cleanup goals for residential use. Using a Niton X-Ray Fluorescence (XRF) meter, Superfund Section personnel screened surface soil at 36 locations between the Douglas Battery facility's eastern perimeter fence and Old Lexington Avenue. Screening included locations on former residential properties and within 200 feet of the two occupied residences on Middleton Street (Ref. 5; Figs. 3A-3B).

XRF soil-screening results are illustrated in Figures 3A and 3B and summarized in Appendix A. Relative concentrations are approximated by the relative size of yellow dot location symbols. At five soil-screening locations, the lead concentrations exceeded NC's 400 mg/kg residential soil-remediation goal. Each of these results occurred south of Battery Drive, in the vacant, company-owned block between the perimeter fence and Woodlawn Avenue, (Ref. 3, Ref. 17). The highest two concentrations (1017 mg/kg; 1296 mg/kg) were detected approximately 20 feet outside the perimeter fence. No XRF lead results exceeded 400 mg/kg on residential property, within 200 feet of an occupied residence or east of Woodlawn Ave (Ref. 17, Appendix A). The areal distribution of soil concentrations suggested historical air transport and deposition, but also indicated a minimal exposure hazard to residents east of the site.

Air Pathway:

The site's lead smelting operation was discontinued in 1969. Smelting and battery manufacturing wastes disposed on site are presently covered by buildings or paved parking areas (Ref. 1; Ref. 5). Therefore, the air pathway was not evaluated as part of this investigation.

Summary and Conclusions:

Discharge of lead from the Douglas Battery Mfg. site to surface water is regulated under an NPDES permit. Historical analytical sampling and recent X-Ray Fluorescence (XRF) screening have detected lead downstream from the site's storm water outfall. However, lead concentrations in the outfall sediment were comparable to non-hazardous soils concentrations characterized by XRF screening east of the battery plant.


XRF screening did not consistently detect elevated lead concentrations in sediment at the probable point of entry (PPE) to the surface water pathway. Parkway Branch, the proximal segment of the pathway, is an urban stream corridor with limited accessibility or recreational use. The nearest wetland and (recreational) fishery are located 7 and 8 miles downstream from the site, respectively.

The site operated a lead smelter which closed down in 1969. Field XRF screening was conducted to survey lead concentrations in surface soil at locations downwind of the facility. Screening revealed that soil lead concentrations exceeded NC remediation goals only in relative proximity to the facility perimeter and not in down wind residential areas.

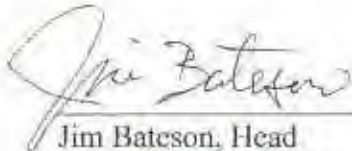
Ms Callihan
August 26, 2009
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Based on the above information and results, the NC Superfund Section recommends that this site's federal status of No Further Remedial Action Planned (NFRAP) remain unchanged. If you have any questions, please contact me at stuart.parker@ncdenr.gov or Jim Bateson at james.bateson@ncdenr.gov, or call me at 919-508-8457.

Sincerely,

 8/26/09

Stuart F. Parker, Date
Hydrogeologist
NC Superfund Section

 8/26/09

Jim Bateson, Head Date
Site Evaluation & Removal
Branch
NC Superfund Section

attachments

cc: Jim Bateson (letter only)
File

**Douglas Battery site
NCD 003 213 030
Site Re-Assessment**

References:

- 1) North Carolina Department of Human Resources, Division of Health Services: Site Inspection Report, Douglas Battery Manufacturing Company, Winston-Salem, North Carolina, NCD 003 213 030, September 1984.
- 2) Rhame, Kenneth, On Scene Coordinator, USEPA Emergency Response and Removal Branch: Pollution Report 1, Initial and Final, Douglas Battery Acid Spill, 500 Battery Drive, Winston-Salem, NC, February 23, 2009.
- 3) Forsyth County, NC Geo-Data Explorer, http://maps2.co.forsyth.nc.us/geodata_08/ Parcel Query Results, June 16, 2009.
- 4) Parker, Stuart F., Hydrogeologist, North Carolina Superfund Section: Telecommunication with Ms. Ruby Z. Spivey, 2943 Middleton Street, Winston-Salem NC, May 10, 2009.
- 5) Parker, Stuart F., Hydrogeologist, NC Superfund Section: Field Notes dated March 10 and May 11, 2009.
- 6) Parker, Stuart F., Hydrogeologist, NC Superfund Section, Memorandum to File: Historical Aerial Photo Analysis, June 12, 2009.
- 7) Sanborn Mapping Co. Winston Salem NC, 1917-1957.
- 8) Environmental Protection Agency: Envirofacts Warehouse Toxics Release Inventory: Water Discharge Permits (PCS) Detailed Reports
http://iaspub.epa.gov/enviro/tris_control. Accessed June 17, 2009;
Facility Registry System (FRS) Detail Report
http://oaspub.epa.gov/enviro/fij_query_dtl_disp_program_facility,
Accessed June 25, 2009
- 9) Douglas Battery Manufacturing Co.: Preliminary plan of action regarding incident 897964. Report dated Monday, February 23, 2009.

- 10) North Carolina Administrative Code (NCAC) 02B .0209 Fresh Surface Water Quality Standards for Class C Waters. Effective May 1, 2007.
- 11) Zinn, Harry, Environmental Engineer, NC Superfund Section Expanded Site Inspection Report, Sherwood Treating Company, NCD 003 231 545, Winston-Salem, Forsyth County, NC, August 30, 1999.
- 12) Greenhorne & O'Mara, Inc. Phase II Screening Site Investigation for the Sherwood Treating Company, Inc, NCD003 231 545, February 1991.
- 13) Google maps 2009 database: <http://maps.google.com> printout June 18, 2009.
- 14) North Carolina Division of Water Quality. Environmental Sensitivity Map 2007, Forsyth County, North Carolina
http://h2o.enr.state.nc.us/csu/documents/fors_2007.pdf
- 15) United States Dept of the Interior, Geological Survey Wetland Database: <http://wetlandsfws.er.usgs.gov>, printout June 23, 2009.
- 16) Douglas Battery Mfg Co., Winston-Salem, NC. Stormwater Discharge Outfall (SDO) Monitoring reports, December 10, 2008 – April 20, 2009.
- 17) North Carolina Inactive Hazardous Sites Branch: Health-based Soil Remediation Goals <http://www.wastenotnc.org/soiltable.pdf> October 2008.
- 18) NUS Corporation Superfund Division. Final Environmental Priorities Initiative, Preliminary Assessment of the ATT Technologies, Inc. (Western Electric Co., Inc.), 3300 Lexington Road, Winston-Salem, Forsyth County, North Carolina.
And attached: EPA Superfund Information Systems: Archived Sites, Western Electric Co., Inc., Lexington Plant, March 27, 2005.



©2009 Google - Map data ©2009 Tele Atlas - Terms



TITLE: Site Location Plan

SITE NAME: Douglas Battery Mfg Co.

LOCATION: Winston-Salem, Forsyth County, NC

US EPA ID #: NCD 003 213 030

DRAWN BY:
Stuart F Parker
SCALE: as shown
DATE: 06/19/09

FIGURE

1



**Douglas Battery
Mfg Co.**

Winston-Salem
Forsyth County, NC
NCN 003 213 030

**Figure
2A:
Site Plan**

- Plant Perimeter
- Stormwater Runoff
 - ⬅ . . . Underground
 - ⬅ Surface
- R Residence

DRAWN BY: Stuart Parker
DATE: June 18, 2009
SCALE: as shown.



**Douglas Battery
Mfg Co.**

Winston-Salem
Forsyth County, NC
NCN 003 213 030

**Figure
2B:
Site Plan**

XRF = Sediment X-Ray
Fluorescence
Reading

Stormwater Runoff
← — Underground
← — Surface

R Residence

DRAWN BY: Stuart Parker
DATE: June 18, 2009
SCALE: as shown.





X-Ray Fluorescence Soil Screening - North

Douglas Battery Mfg Co.
NCD 003 213 030
Winston-Salem, Forsyth County, NC

ASSEMBLED BY: Stuart F Parker
SCALE: as shown
DATE: 06/23/2007

Yellow symbol size is proportional
to soil screening lead concentration
as measured by X-Ray Fluorescence

FIGURE

3A



X-Ray Fluorescence Soil Screening - South

Douglas Battery Mfg Co.
NCD 003 213 030
Winston-Salem, Forsyth County, NC

ASSEMBLED BY: Stuart F Parker
SCALE: as shown
DATE: 06/23/2007

Yellow symbol size is proportional
to soil screening lead concentration
as measured by X-Ray Fluorescence.

FIGURE
3B



Photo 1: Douglas Battery vacant block at SW corner of Old Lexington Rd and Battery Dr. Former Western Electric plant is in background



Photo 2: Douglas Battery plant entrance, viewed from Battery Dr.



Photo 3: Douglas Battery storm water outfall at railroad on west side of property.



Photo 4: Location 40 - XRF sediment screening below storm water outfall.



Photo 5: Storm water culvert entrance beneath Starlight Dr.



**Photo 6: Storm water culvert exit northwest of I-40/US-52 interchange.
Location 2 – XRF sediment screening above PPE to Parkway Branch.**



Photo 7: Parkway Branch segment, upstream from PPE and north of I-40/US-52 interchange. Locations 1 and 3 - Background XRF sediment screening.



Photo 8: Former textile mill parking lot used as school playground, up gradient (north) from background Parkway Branch segment.



Photo 9: Vacant lot and residence (Whisenhunt) on north portion of Middleton St, east of Douglas battery plant.



Photo 10: Vacant lot and residence (Spivey) on north portion of Middleton St, east of Douglas Battery plant



Photo 11: Automotive garage on Old Lexington Rd, east of Douglas Battery plant.



Photo 12: Vacant residence and garage (Whisenhunt) on Old Lexington Rd, east of Douglas Battery plant

Douglas Battery Mfg Co
Winston-Salem, NC
NCD 003 213 030
May 11, 2009
XRF Screening Data Locations

Location	Matrix	Comment	Time	Date	Lead Reading (ppm)	Latitude	Longitude	X Point	Y Point
1	Sediment	Upstream Background	10:40:48am	5/11/2009	*	36.06435800680	-80.23289122780	1635611.687030	844589.212880
2	Sediment	Culvert (PPE)	10:42:58am	5/11/2009	*	36.06438301280	-80.23294814820	1635594.977790	844598.524112
3	Sediment	Downstream Background	10:44:19am	5/11/2009	*	36.06441370490	-80.23274466970	1635655.252700	844608.949252
4	Soil	East of Douglas Battery Mfg Plant	02:14:02pm	5/11/2009	194	36.06020557610	-80.22602884240	1637621.133670	843052.591929
5	Soil	"	02:19:34pm	5/11/2009	187	36.06030356360	-80.22602852390	1637621.668340	843088.258601
6	Soil	"	02:39:48pm	5/11/2009	310	36.06032430490	-80.22585972610	1637671.650770	843095.192340
7	Soil	"	02:28:03pm	5/11/2009	209	36.06022578190	-80.22589817950	1637659.842750	843059.469962
8	Soil	"	02:31:22pm	5/11/2009	81	36.06021122750	-80.22569133850	1637720.910460	843053.417194
9	Soil	"	02:35:23pm	5/11/2009	342	36.06034196670	-80.22568225340	1637724.183230	843100.973617
10	Soil	"	02:45:54pm	5/11/2009	69	36.05990022890	-80.22563555490	1637735.999890	842940.009005
11	Soil	"	02:49:38pm	5/11/2009	64	36.05974618590	-80.22565066370	1637730.842030	842883.991904
12	Soil	"	02:54:00pm	5/11/2009	144	36.05958871560	-80.22564004180	1637733.273750	842826.633392
13	Soil	"	02:57:00pm	5/11/2009	115	36.05940530470	-80.22562447490	1637737.050330	842759.814361
14	Soil	"	03:00:16pm	5/11/2009	118	36.05927454330	-80.22564195880	1637731.295090	842712.280516
15	Soil	"	03:02:37pm	5/11/2009	85	36.05911428800	-80.22565455480	1637726.851960	842653.993000
16	Soil	"	03:10:39pm	5/11/2009	148	36.05898224690	-80.22568136880	1637718.333350	842606.027410
17	Soil	"	03:11:58pm	5/11/2009	50	36.05883068780	-80.22569796480	1637712.747000	842550.919947
18	Soil	"	03:14:02pm	5/11/2009	101	36.05864997540	-80.22571632700	1637706.507630	842485.207015
19	Soil	"	03:24:18pm	5/11/2009	129	36.05883124740	-80.22623992100	1637552.568280	842553.101933
20	Soil	"	03:28:06pm	5/11/2009	55	36.05906739890	-80.22623140360	1637556.147580	842639.030815
21	Soil	"	03:31:01pm	5/11/2009	47	36.05936427610	-80.22620076320	1637566.538540	842746.983327
22	Soil	"	03:34:28pm	5/11/2009	55	36.05964791450	-80.22621954350	1637562.263240	842850.297269
23	Soil	"	03:38:56pm	5/11/2009	41	36.05996357110	-80.22618314630	1637574.440050	842965.064521
24	Soil	"	03:43:05pm	5/11/2009	32	36.05971744400	-80.22664890090	1637435.675870	842877.174130
25	Soil	"	03:45:39pm	5/11/2009	94	36.05967051280	-80.22684238880	1637378.277850	842860.797741
26	Soil	"	03:49:21pm	5/11/2009	786	36.05969303710	-80.22716374430	1637283.399970	842870.170677
27	Soil	"	03:53:45pm	5/11/2009	648	36.05973894770	-80.22731290830	1637239.519970	842887.427356
28	Soil	"	03:57:33pm	5/11/2009	1017	36.05980829600	-80.22769123370	1637128.015130	842914.053112
29	Soil	"	04:00:03pm	5/11/2009	645	36.05964964950	-80.22761901880	1637148.644610	842856.041244
30	Soil	"	04:03:34pm	5/11/2009	246	36.05929290320	-80.22788402180	1637068.714520	842727.153081
31	Soil	"	04:13:13pm	5/11/2009	1296	36.05912634310	-80.22790710670	1637061.141580	842666.609040
32	Soil	"	04:17:07pm	5/11/2009	182	36.05907255450	-80.22767216180	1637130.339760	842646.170897
33	Soil	"	04:24:07pm	5/11/2009	105	36.06002478680	-80.22679942020	1637392.571330	842989.597782
34	Soil	"	04:28:43pm	5/11/2009	382	36.06025684650	-80.22701023290	1637331.308320	843074.838485
35	Soil	"	04:32:41pm	5/11/2009	135	36.06044870160	-80.22691526860	1637360.238780	843144.327533
36	Soil	"	04:37:07pm	5/11/2009	396	36.06064066320	-80.22647826240	1637490.261600	843212.606134
37	Soil	"	04:42:24pm	5/11/2009	253	36.06036019620	-80.22659606420	1637454.183220	843110.945291
38	Soil	"	04:48:36pm	5/11/2009	125	36.06065333680	-80.22689176780	1637368.105210	843218.729642
39	Soil	"	04:52:44pm	5/11/2009	103	36.06097989450	-80.22689048910	1637369.952290	843337.593199
40	Soil	"	05:13:06pm	5/11/2009	212	36.06061200150	-80.22993102590	1636469.652410	843214.799566

* Indicates two readings taken, one or both of which was non-detect.



REFERENCE 1

CERCLA

DOUGLAS BATTERY MANUFACTURING COMPANY

WINSTON-SALEM, NORTH CAROLINA 27107
NCD 003213030

LEE CROSBY

SEPTEMBER, 1984

Douglas Battery Manufacturing Company, Inc.

Winston-Salem, North Carolina 27107
NCD 003213030

Lee Crosby
September 1984

In June 1981, Section 103(c) CERCLA notifications were submitted to the U.S. Environmental Protection Agency showing that an estimated 2,100 cubic feet of waste flue ash dust from a lead smelting operation had been landfilled on-site in 1969 and that 120,000 cubic feet of crushed rubber battery cases had been landfilled on-site from the 1930's through 1969 at Douglas Battery Manufacturing Company. The waste flue ash is buried under an asphalt parking lot and the battery cases are buried under the main manufacturing building.

Location

The location for Douglas Battery Manufacturing Company is:

Douglas Battery Manufacturing Company, Inc.
500 Battery Drive
Winston-Salem, North Carolina 27107

Forsyth County
Latitude: 36° 03' 33"
Longitude: 80° 13' 47"

Attached are the following maps:

North Carolina State Map
Winston-Salem City Map
U.S. Geological Survey Map
Douglas Battery Facility Map

Travel west on Interstate Highway 40 from Greensboro toward Winston-Salem. Exit on Highway 8 South (also known as the North-South Expressway). Exit on Corporation Parkway East and travel less than one mile. Exit on the Old Lexington Road. At the end of the exit ramp cross the Old Lexington Road to Battery Drive. Douglas Battery is located at the end of the block.

Site Layout

The Douglas Battery Manufacturing Company is located on approximately twenty acres of land in an industrial area within the city limits of Winston-Salem. There are two disposal areas located on the plant property. A Douglas Battery site facility map and a site sampling map are attached.

Site A, located under an asphalt parking lot, contains approximately 2,100 cubic feet of waste flue dust from a lead smelting operation which was closed in 1969. Site B, located under the primary Douglas Battery manufacturing building, contains broken and crushed hard battery cases.

Ownership/Site Use History

In 1919 the Winston Lead Smelting Company began operations at the present Douglas Battery location. The company was owned and operated by two Douglas brothers. In the 1930's the Douglas brothers began battery manufacturing operations. The company is currently operated by three Douglas family members.

According to the environment engineer, Douglas Battery has never manufactured any batteries other than lead-acid batteries.

Permit and Regulatory History

The Douglas Battery Manufacturing Company pre-treatment system is regulated by permit from the City of Winston-Salem. The City of Winston-Salem treatment facilities are permitted under the NPDES Program, Permit Number NC0037834103.

The Forsyth County Environmental Affairs Department has issued air permits for Douglas Battery (permit numbers: 00389 0001 P, 00389 0002 P, 00389 0003 P, 00389 0004 P and others).

Douglas Battery is categorized as a generator under the Resource Conservation and Recovery Act. The RCRA Part A permit (EPA Form 3510) is attached.

Remedial Action to Date

The N.C. Division of Health Services has recommended the installation of monitoring wells to determine groundwater movements and lead migration. Remedial action was to be based on groundwater data from the monitoring wells; however, no wells have been installed. Correspondence (3 July 1981) from N.C. DHR Environmental Health Section to Douglas Battery is attached.

Trip Summary

N.C. Division of Health Services 3012 Engineer, Len Bramble, and 3012 Chemist, Lee Crosby, arrived at Douglas Battery Manufacturing Company at 10:30 a.m. on 5 September 1984. Environmental Engineer, Robert Fritts; Hazardous Materials Engineer, James Perkins; and Safety Engineer, John Hale, provided an explanation of the facility.

Laboratory Data

Upstream and downstream water and sediment samples were taken from a stream originating from springs under the adjacent ATT Technologies property. One water sample was taken from a well located inside the SLI Manufacturing Building. A facility map showing sampling locations is attached. According to Douglas Battery engineers, the well is approximately 400 feet deep and the well pump has not been used in fifteen years. The sample was taken from the well after allowing the water to flow for four minutes.

Each of the five samples was analyzed for pH and extractable and total lead (Pb), cadmium (Cd), chromium (Cr), mercury (Hg), aluminum (Al) and iron (Fe). Conductivity readings were reported for the three water samples.

U.S. Environmental Protection Agency recommended procedures and EPA known standards are used by the N.C. Division of Health Services Laboratory to identify and quantitate field samples. The N.C. DHS Laboratory is certified by the American Industrial Hygiene Association (AIHA) and by the U.S. EPA for drinking water parameters.

In 1978 Douglas Battery contracted with Russell and Axon Engineers, Planners, and Architects, Inc. in Kernersville, N.C., to evaluate the Douglas Battery waste treatment system. An extensive sample scheme was implemented. According to Douglas Battery Engineer, Robert Fritts, upstream sediment samples (location #1) analyzed for aluminum showed 2900 ppm; downstream sediment samples (location #2) analyzed for aluminum showed 1040 ppm. According to Mr. Fritts, aluminum is not used in Douglas Battery Manufacturing processes.

Toxicological/Chemical Characteristics

Lead is toxic by ingestion and inhalation of dust or fumes. Tolerance for fumes and dusts and inorganic lead compounds is 0.15 mg per cubic meter of air. In 1981 the EPA ambient air standard was 1.5 micrograms per cubic meter. Lead is a cumulative poison. FDA regulations require zero lead content in foods and 0.05 percent in house paints.

Elemental lead is a heavy soft gray solid with characteristic metallic properties. Lead is insoluble in water, but dissolves slowly in slightly acidic conditions. Physical properties of lead are:

	<u>Pb</u>
Specific gravity:	11.35
Melting point:	327.4°C
Boiling point:	1755°C
Non-combustible	

Lead oxide and lead dioxide are partially soluble in acids and insoluble in water. Lead sulfate is partially soluble in hot water.

Samples were taken from a 400 foot well used for drinking water more than twenty years ago, and from a nearby intermittent stream. Samples were iced and submitted to the N.C. Division of Health Services laboratory.

Photographs (attached hereto) were taken of the plant .

Environmental Setting

Winston-Salem is located in the Piedmont area of North Carolina, characterized by a moderate climate. The average annual rainfall is less than forty-four (44) inches each year. Generally higher precipitation levels occur in the late summer and winter months.

Soil survey data show that the soils are classified as pacolet. The estimated depth to bedrock as well as the seasonal high water table is greater than four feet. The basic texture of the top soil is characterized as sandy loam. N.C. Division of Health Services laboratory data and soil survey data indicate that the normal pH for soil ranges from slightly acidic (6.1 to 6.5) to neutral (6.6 to 7.3). NC DHS data and soil survey data are attached.

According to Douglas Battery engineers, company engineering studies have shown background levels for iron, zinc, and aluminum are relatively high. Cadmium and chromium have never been detected on-site.

Douglas Battery Manufacturing Company is located beside an American Telegraph and Telephone plant in an industrial area south of the Winston-Salem business district. Adjacent to Douglas Battery are less than twenty-five factory houses, most of which are now owner-occupied. The City of Winston-Salem provides water and sewer services to all of the houses in the vicinity.

Waste Types and Quantities

The Douglas Battery notification of Hazardous Waste Site (EPA Form 8900-1) shows that an estimated 2,100 cubic feet of emission control dust/sludge from secondary smelting (K069) was landfilled on-site. The waste flue dust was the result of a one-time cleanup when the lead smelting operation was closed in 1969. According to company engineers, the flue dust is covered by approximately four feet of soil and an asphalt parking lot.

Douglas Battery submitted a second notification of hazardous waste site showing that approximately 120,000 cubic feet of broken and crushed hard rubber lead acid battery cases were also buried on site. Notifications are attached. According to company engineers, acid, plates and separators were removed from the cases before crushing. Site is located under the automotive battery manufacturing building. During construction of the building, a French drain collection system was constructed to direct flow of 6,000 GPD from springs in the area away from the building. Water from the collection system is directed to a sanitary wastewater and process wastewater manhole and then to the City. A discharge permit from the City of Winston-Salem is attached.

Lab Data
Summary

<u>Location and Type of Sample</u>	<u>Lead</u>		<u>Aluminum</u>		<u>pH</u>
	<u>Extractable</u>	<u>Totals</u>	<u>Extractable</u>	<u>Totals</u>	
Location 1 Upstream Sediment	< 0.1 ppm	65 ppm	0.3 ppm	2160 ppm	7.2
Location 1 Upstream Liquid		< 0.03 ppm		0.1 ppm	5.9
Location 2 Downstream Sediment	< 0.1 ppm	93 ppm	0.2 ppm	4980 ppm	6.9
Location 2 Downstream Liquid		0.12 ppm		0.4 ppm	6.7
Location 3 Well		< 0.03 ppm		0.1	6.4

Laboratory results are reported in ppm (mg/l.). Laboratory results with additional parameters are attached.

August 5, 1986



Mr. Bill Holman
Hazardous Waste Project
Conservation Council of North Carolina
1024 Washington Street
Raleigh, North Carolina 27605

Dear Mr. Holman:

I am writing to acknowledge your letter of July 24, 1986, expressing concern about disposal of materials at our site in Winston-Salem, North Carolina. I share your concern for the environment and I have checked our status with an official of the State Environmental Protection Agency who has assured us that we are in compliance with all Federal, State, and Local environmental regulations.

Thank you for your interest and please be assured that Douglas Battery Manufacturing Company places a high priority on protection of the environment.

Sincerely,

A handwritten signature in cursive script that reads "Kirk Rife".

Kirk Rife, Manager
Environmental and
Construction Engineering

KR:ld

c: Ms. Leigh Crosby
Mr. G. Wilson Douglas, Jr
Mr. T. S. Douglas, III
Mr. David Boden



Reply To: 1024 Washington St.
Raleigh, NC. 27605

Robert W. Fritts
Env. and Constr. Engineer
Douglas Battery Manufacturing
500 Battery Drive
Winston-Salem, N.C. 27107

July 24, 1986

Dear Mr. Fritts:

Douglas Battery Manufacturing (site #NCD003213030) is included on the Department of Human Resources ERRIS list as containing improperly disposed hazardous waste. A site inspection recorded October 1, 1984 indicated the presence of 2100 cubic feet of waste flue ash from old lead smelting buried before 1969, and crushed hard rubber battery cases discarded on-site in low areas and land-filled. These wastes represent an environmental threat due to the probability that lead and sulfuric acid will leach into the ground-water and surrounding soil.

The CCNC believes that responsible parties should take steps to monitor and clean-up their own hazardous waste sites and record them on the property deed.

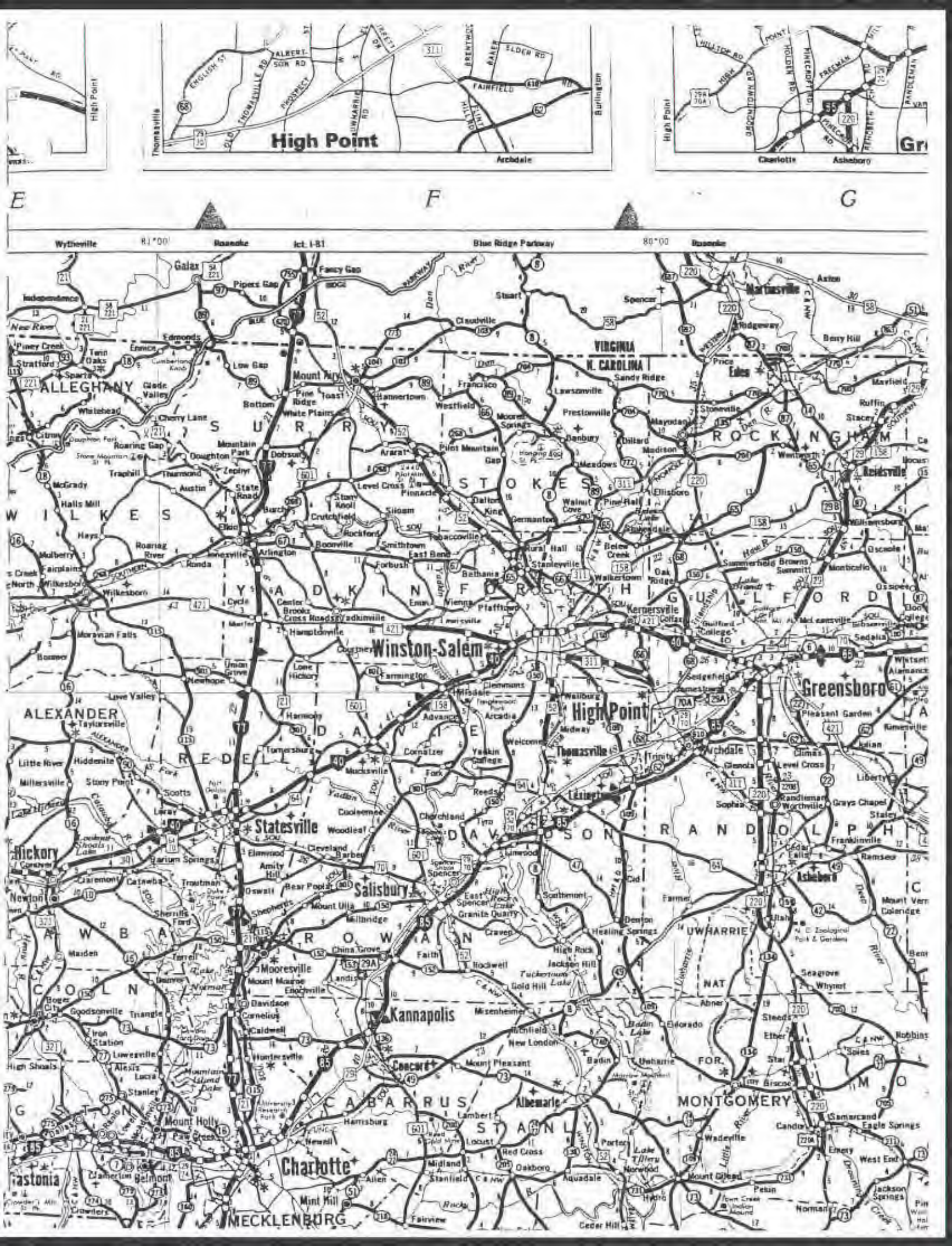
CCNC would like to know the present status of this site. What steps have been taken to monitor the waste and its environmental impact? What clean-up plans have been prepared or actually implemented? Has this site been recorded as containing hazardous waste on the deed?

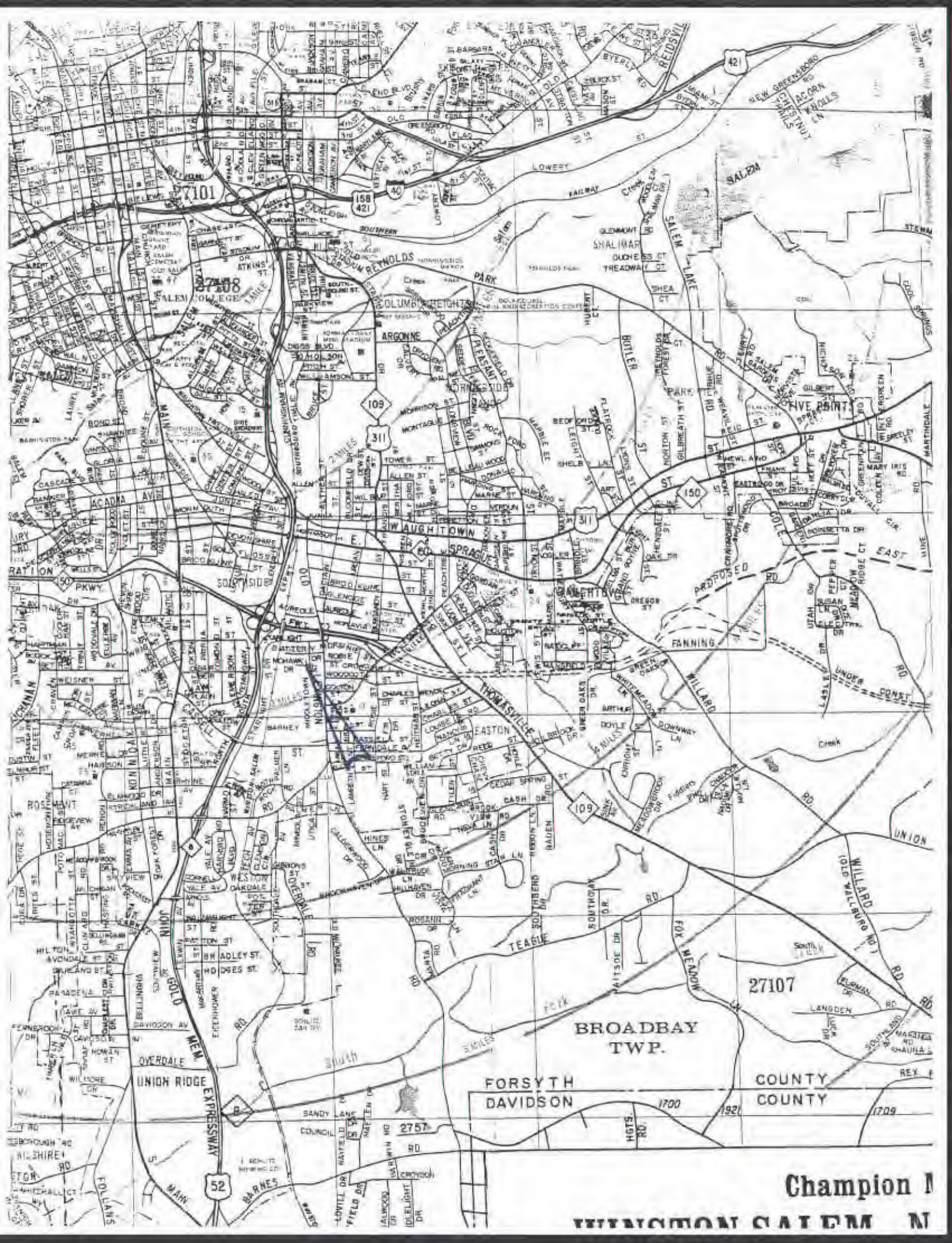
We would appreciate any information you could provide as to the status of your progress at this site.

Thank you,
Bill Holman

Bill Holman, Director
Hazardous Waste Project
Conservation Council of North Carolina

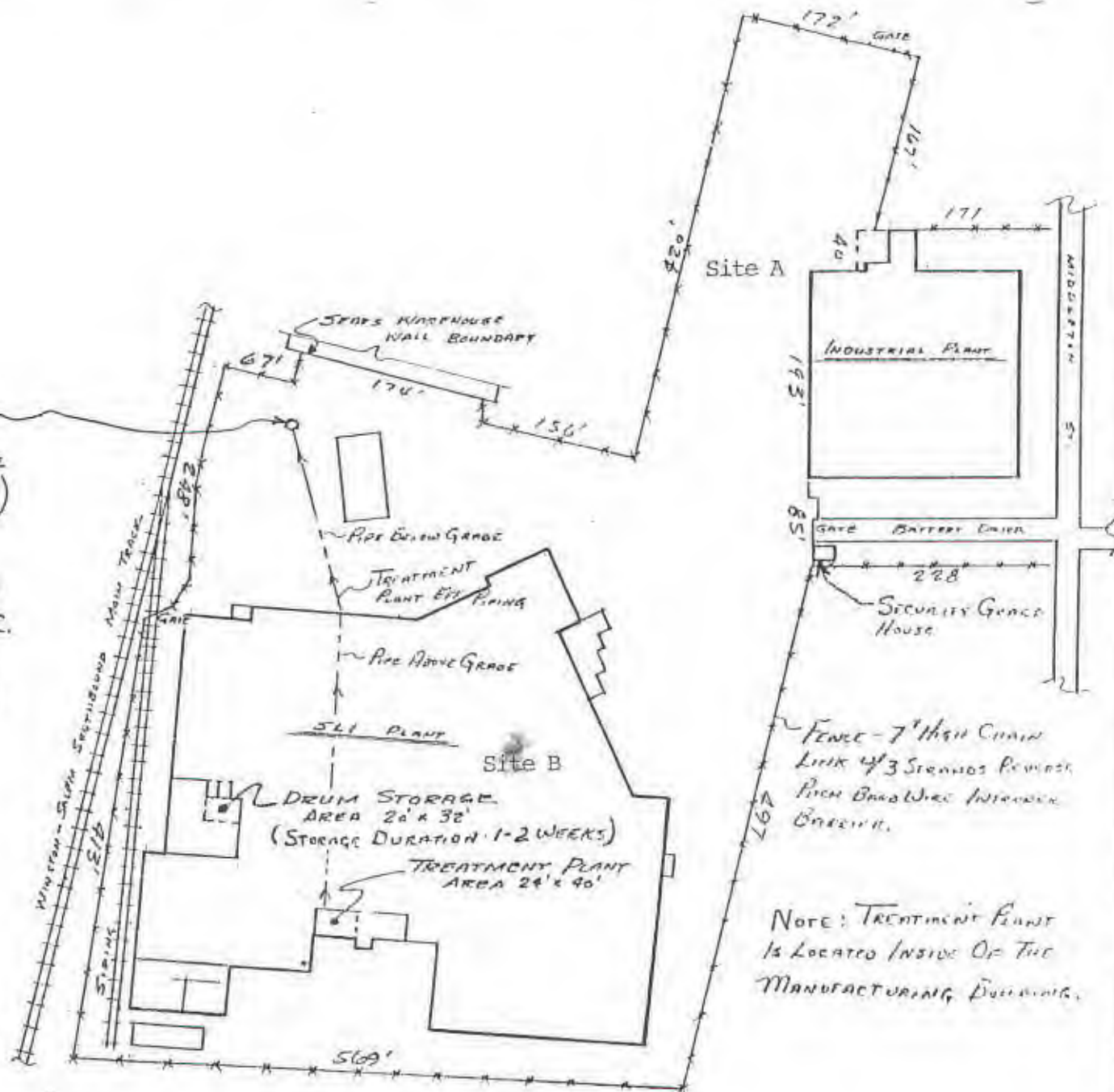
cc: Jack Ravan, EPA
Bill Meyer, DHR







TREATMENT PLANT DISCHARGE POINT
 (CITY OF WINSTON-SALEM, N.C. SEWER
 LOCATION SERIAL NO. 42-51502)
 DISCHARGE IS UNDER INDUSTRIAL
 PRETREATMENT PERMIT NO. C-501-B
 FROM CITY OF WINSTON-SALEM, N.C.
 (WINSTON-SALEM, N.C. N.P.D.E.S.
 PERMIT NO. 15 N.C.0037234)



DOUGLAS BATTERY
 SCALE 1" = 150'

NOTE: TREATMENT PLANT
 IS LOCATED INSIDE OF THE
 MANUFACTURING BUILDING.

Sampling Points
Douglas Battery
MCD 003213030



REFERENCE 2

**United States Environmental Protection Agency
Region IV
POLLUTION REPORT**

Date: Monday, February 23, 2009

From: Kenneth Rhame, OSC

Subject:

Initial and Final
Douglas Battery Acid Spill
500 Battery Dr, Winston Salem, NC

POLREP No.:	1	Site #:	
Reporting Period:		D.O. #:	
Start Date:	2/19/2009	Response Authority:	CERCLA
Mob Date:	2/19/2009	Response Type:	Emergency
Completion Date:	2/23/2009	NPL Status:	Non NPL
CERCLIS ID #:		Incident Category:	Removal Action
RCRIS ID #:		Contract #	

Site Description

2/19/2009 US EPA received a NRC notification reporting the release of a unknown amount of sulfuric acid due to a ruptured process line. The process line is a 2" line that runs more than 1,000 feet underground from the bulk storage area to the manufacturing building. The 2" line runs through a 4" line. The 2" line ruptured, filling up the 4" line causing the 4" line to overflow at both ends. It is unknown how long the 2" line has been leaking. Sulfuric Acid was surfacing through a paved (concrete and asphalt) parking area as well as overflowing out of the manufacturing building, impacting soil. The acid was contained and neutralized using sodium bicarbonate.

Current Activities

2/20/2009 US EPA conducted a site visit. The pipe was being excavated to locate the leak, soil was being placed in drums for containment and proper waste characterization and disposal.

Reference 2

Planned Removal Actions

Upon the completion of the excavation, confirmation soil sampling will be conducted to determine cleanup objectives have been met.

EPA will coordinate with NC DENR Haz-Waste and Inactive Hazardous Sites for closure.

Key Issues

Facility has been in operation manufacturing lead/acid batteries since the 1930s.

There is a creek that runs behind the facility.

No monitoring wells exist on site.

There are former acid lagoons that have been filled in on site, there are former waste burial areas on site consisting of battery casings and slag from a smelter.

Two residents reside across the street.

Estimated Costs *

	Budgeted	Total To Date	Remaining	% Remaining
Extramural Costs				
Intramural Costs				
Total Site Costs	\$0.00	\$0.00	\$0.00	0.00%

* The above accounting of expenditures is an estimate based on figures known to the OSC at the time this report was written. The OSC does not necessarily receive specific figures on final payments made to any contractor(s). Other financial data which the OSC must rely upon may not be entirely up-to-date. The cost accounting provided in this report does not necessarily represent an exact monetary figure which the government may include in any claim for cost recovery.

epaossc.net/DouglasBatteryAcidSpill

REFERENCE 3



Identify Results

PIN Tax Records Similar Properties

6834-62-8891.00 - Douglas Battery Mfg Co
Middleton St

PIN	6834-62-8891.00
View	BER Appeal Form Zoom To Parcel Record Card Sales History Tax Billing Information
Property Images	View Photo-1 , View Photo-2 , View Photo-3
Property Address	Middleton St
Block Lot	2572 001A
Additional Lots	001B, 002B, 003, 004, 101, 102, 103, 104, 105, 106
Tax Jurisdiction	Winston-Salem
Taxable Owner Name1	Douglas Battery Mfg Co
Taxable Owner Name2	
Taxable Owner List	View All Owners
Taxable Owner Address	PO Box 12159
Taxable Owner City St Zip	Winston-Salem, NC 27117
Taxable Deed Bk-Pg	1453-111
Taxable Deed Date	8/19/1984
Taxable Deed Stamps	\$1
Current Owner Name1	Douglas Battery Mfg Co
Current Owner Name2	
Current Owner Address	PO Box 12159
Current Owner City St Zip	Winston-Salem, NC 27117
Current Deed Bk-Pg	1453-111
Current Deed Date	8/19/1984
Current Deed Stamps	\$1

Forsyth County, NC Geo-Data Explorer - Mozilla Firefox

File Edit View History Bookmarks Tools Help

http://maps2.co.forsyth.nc.us/geodata_08/

Getting Started Latest Headlines Politics - News, Opinion...

Forsyth County, NC Geo-Data Explorer

File Edit View Selection Tools Help

Map Search Layers Maps Locator Legend



Contact Us County Home WS/FC GIS Tax Office Tax Bill Online Subscriber Sign In Selectable Layer: Tax Parcels

Done

Identify Results

PIN Tax Records [Similar Properties](#)

6834-73-4257.00 - Whisenhunt, Robert Eugene & Whisenhunt, Mary

2925 Middleton St
View
[BER Form](#)
[Zoom To Parcel](#)
[Record Card](#)
[Sales History](#)
[Tax Billing Information](#)

Property Address	2925 Middleton St
Block Lot	1858 034
Additional Lots	035
Tax Jurisdiction	Winston-Salem
Taxable Owner Name1	Whisenhunt, Robert Eugene
Taxable Owner Name2	Whisenhunt, Mary
Taxable Owner List	View All Owners
Taxable Owner Address	2925 Middleton Dr
Taxable Owner City St Zip	Winston-Salem, NC 27107
Taxable Deed Bk-Pg	1436-1682
Taxable Deed Date	4/11/1984
Taxable Deed Stamps	
Current Owner Name1	Whisenhunt, Robert Eugene
Current Owner Name2	Whisenhunt, Mary
Current Owner Address	2925 Middleton Dr
Current Owner City St Zip	Winston-Salem, NC 27107
Current Deed Bk-Pg	1436-1682
Current Deed Date	4/11/1984
Current Deed Stamps	
Map Number	636842
Assessment Method	Cost
Land Value	\$32,175
Dwelling Value	\$17,573
Commercial Value	
Industrial Value	
Misc Imp Value	\$16,106



Identify Results

PIN Tax Records Similar Properties

6834-73-4257.00 - Whisenhunt, Robert Eugene
2925 Middleton St

PIN	6834-73-4257.00
View	BER Appeal Form Zoom To Parcel Record Card Sales History Tax Billing Information
Property Address	2925 Middleton St
Block Lot	1856 034
Additional Lots	035
Tax Jurisdiction	Winston-Salem
Taxable Owner Name1	Whisenhunt, Robert Eugene
Taxable Owner Name2	
Taxable Owner List	View All Owners
Taxable Owner Address	2925 Middleton Dr
Taxable Owner City St Zip	Winston-Salem, NC 27107
Taxable Deed Bk-Pg	1436-1682
Taxable Deed Date	4/11/1984
Taxable Deed Stamps	
Current Owner Name1	Whisenhunt, Robert Eugene
Current Owner Name2	
Current Owner Address	2925 Middleton Dr
Current Owner City St Zip	Winston-Salem, NC 27107
Current Deed Bk-Pg	1436-1682
Current Deed Date	4/11/1984
Current Deed Stamps	
Map Number	636842
Assessment Method	Cost
Land Value	\$32,175
Dwelling Value	\$17,673
Commercial Value	





Identify Results

PIN Tax Records Similar Properties

6834-73-6137.00 - Whisenhunt, Robert

= J

2946 Old Lexington Rd

PIN	6834-73-6137.00
View	BER Appeal Form Zoom To Parcel Record Card Sales History Tax Billing Information
Property Address	2946 Old Lexington Rd
Block Lot	1856 006
Additional Lots	007
Tax Jurisdiction	Winston-Salem
Taxable Owner Name1	Whisenhunt, Robert J
Taxable Owner Name2	
Taxable Owner List	View All Owners
Taxable Owner Address	2272 Brindie St
Taxable Owner City St Zip	Winston-Salem, NC 27107
Taxable Deed Blk-Pg	
Taxable Deed Date	
Taxable Deed Stamps	
Current Owner Name1	Whisenhunt, Robert J
Current Owner Name2	
Current Owner Address	2272 Brindie St
Current Owner City St Zip	Winston-Salem, NC 27107
Current Deed Blk-Pg	
Current Deed Date	
Current Deed Stamps	
Map Number	636842
Assessment Method	Cost
Land Value	\$40,500
Dwelling Value	\$7,997
Commercial Value	\$16,170



Identify Results

PIN Tax Records Similar Properties

6834-73-6332.00 - One At A Time Properties Llc
2915 Starlight Dr 6834-73-6332.00

View
[BER Form](#)
[Zoom To Parcel](#)
[Record Card](#)
[Sales History](#)
[Tax Billing Information](#)

Property Address 2915 Starlight Dr

Block Lot 1856 002A

Additional Lots 003, 004, 005

Tax Jurisdiction Winston-Salem

Taxable Owner Name1 One At A Time Properties Llc

Taxable Owner Name2

Taxable Owner List [View All Owners](#)

Taxable Owner Address 535 Montroyal Rd

Taxable Owner City St Zip Rural Hall, NC 27045

Taxable Deed Bk-Pg 2846-3803

Taxable Deed Date 7/29/2008

Taxable Deed Stamps

Current Owner Name1 One At A Time Properties Llc

Current Owner Name2

Current Owner Address 535 Montroyal Rd

Current Owner City St Zip Rural Hall, NC 27045

Current Deed Bk-Pg 2846-3803

Current Deed Date 7/29/2008

Current Deed Stamps

Map Number 636842

Assessment Method Cost

Value Status **Values to be determined**

Land Value

Dwelling Value

Commercial Value

Industrial Value



Identify Results

PIN Tax Records Similar Properties

6834-73-6832.00 - One At A Time Properties Llc

2915 Starlight Dr
View
[BER Appeal Form](#)
[Zoom To Parcel](#)
[Record Card](#)
[Sales History](#)
[Tax Billing Information](#)

Property Address	2915 Starlight Dr
Block Lot	1856 002A
Additional Lots	003, 004, 005
Tax Jurisdiction	Winston-Salem
Taxable Owner Name1	One At A Time Properties Llc
Taxable Owner Name2	
Taxable Owner List	View All Owners
Taxable Owner Address	535 Montroyal Rd
Taxable Owner City St Zip	Rural Hall, NC 27045
Taxable Deed Bk-Pg	2846-3803
Taxable Deed Date	7/29/2008
Taxable Deed Stamps	
Current Owner Name1	One At A Time Properties Llc
Current Owner Name2	
Current Owner Address	535 Montroyal Rd
Current Owner City St Zip	Rural Hall, NC 27045
Current Deed Bk-Pg	2846-3803
Current Deed Date	7/29/2008
Current Deed Stamps	
Map Number	636842
Assessment Method	Cost
Land Value	\$75,938
Dwelling Value	
Commercial Value	\$73,069
Industrial Value	
Misc Imp Value	\$16,792

Identify Results


PIN Tax Records Similar Properties

6834-72-8989.00 - Sutphin, Lottie R 2959 Old Lexington Rd	
View	BER Form Zoom To Parcel Record Card Sales History Tax Billing Information
Property Address	2959 Old Lexington Rd
Block Lot	1706 008D
Additional Lots	
Tax Jurisdiction	Winston-Salem
Taxable Owner Name1	Sutphin, Lottie R
Taxable Owner Name2	
Taxable Owner List	View All Owners
Taxable Owner Address	625 Cassell St
Taxable Owner City St Zip	Winston-Salem, NC 27107
Taxable Deed Bk-Pg	2234-4271
Taxable Deed Date	2/21/2002
Taxable Deed Stamps	\$70
Current Owner Name1	Sutphin, Lottie R
Current Owner Name2	
Current Owner Address	625 Cassell St
Current Owner City St Zip	Winston-Salem, NC 27107
Current Deed Bk-Pg	2234-4271
Current Deed Date	2/21/2002
Current Deed Stamps	\$70
Map Number	636842
Assessment Method	Cost
Land Value	\$16,453
Dwelling Value	\$24,244
Commercial Value	
Industrial Value	
Misc Imp Value	\$360



REFERENCE 4

MEMORANDUM

To: File
From: Stuart F. Parker, Hydrogeologist 
Date: May 10, 2009
Subject: Douglas Battery Mfg Co.
NCD 003 213 030
Winston-Salem, Forsyth County, NC
Telecommunications with local residents

On May 10, 2009 SFP telephoned Ms. Ruby Z. Spivey (336-788-4830). Ms. Spivey was owner and resident of 2943 Middleton Street, located on the northeast corner with Battery Drive and across from the entrance to the Douglas Battery plant. Ms. Spivey reported that she was widowed and lived there with one other resident.

SFP explained the purpose of the upcoming soil screening investigation and inquired about local history and current residents on her block. Ms. Spivey reported that there had been three Whisenhunt men, now very elderly or deceased. Robert E. Whisenhunt, north of her on (2925) Middleton Street, was widowed and retired, after operating an automotive scrap dealership on his property. She reported that Douglas Battery had bought up most of the former residential/commercial properties on her block. Buyers had been interested in the commercial properties there as well, but she was unaware of their status. Ms. Spivey reported that the land tracts south of Battery Drive had been owned by Westinghouse and later by AT&T, before being sold to Douglas Battery. She noted that Douglas battery had "come a long way" in cleaning up their operations and air emissions.

SFP tried to call R. E., Whisenhunt's listed number (336-771-2606) but it came up as disconnected.

SFP left a voice message for Lottie Sutphin (336-788-4830), the non-resident owner of 2959 Old Lexington Road, at the east end of Battery Drive.

REFERENCE 5

DOUGLAS BATEMY
NCD 003213030
WINSTON SALEM NC

3/10/09

SITE REFINANCE

①

15:12 ON SITE: MET W/ BOBBIE WARE
JCDERR WINSLOW SALEM REGIONAL OFFICE
(INACTIVE HAZ SITE, BRANCH)

① Site is SPL BUT NO GROUND LAST
8 YEARS // POTENTIAL END JUSTICE CIRCLED

② If Locals are ASSIGNED to w/ OTHER SITE Locality

the facility BATTERY DRIVE

BATTERY DRIVE

— (OPEN)

D. 16th

6-2

OLD

Downing Bart
FACILITY

10052

Ans 4

CONCLUSIONS

PA/SI SAMPLE USE ① (1984)

РАМКА 60

IND/COMM	PAGE
----------	------

1 LAME BLDB.

ADAM

crash

1 Avenue Street

GA NABE

540

FORREST
CLAYTON
HAY
HAY

2948:
VACANT

4 ~~200~~

AT-5)

ELCART

Q. 10. (a) $\frac{1}{2}$

12-11-20

BOOK STORE - HAS OLD LIFE BRUSH!
between 15 AND STAMMERS DRIVE
[X] DRIVE is driveway

ALVIN SHARP HAS VIS. EVID. OF INST. ON
SIDE FRONT LEFT TIRE NO

\overline{G} cannot not to auto loop

RESISTANCE (C) CURRENT AT SE CORN OF RTR²
BATTERY FACILITY

DOUGLAS BATTERY
NCD 003 213 030
WINSTON-SALEM NC

RECOMPANARE
3/10/09

③

④

5/11/09

DOUGLAS BATTERY INTEGRATED SI
~~SITE XRF SCREENING~~ / EFA SF PARKER
 XRF CON SCREENING JASON DOON (EFA)

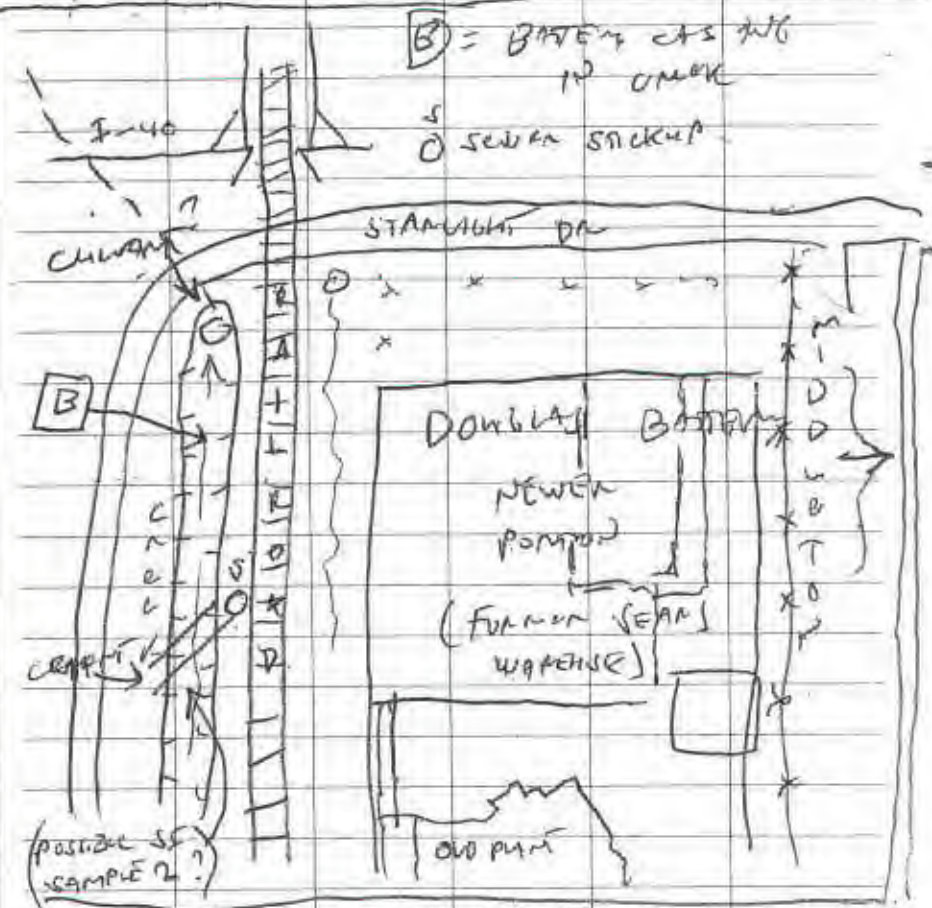

How XRF Soil Screening

MEX
 JIM DOUGLAS, EXER VICE PRESIDENT
 AL. ~~CS~~ CSONTOS: ENVELOPING
 (CHAS R. IS PRES) (WILSON R. IS ATTY AND VP)
 ACCORDING TO CSONTOS:
 WILSONHUT - OWNED SERVICE GAR ON
 OLD LEXINGTON RD. FRANK REATY WAS
 TRYING TO SELL (TO DOUGLAS) THE GARAGE
 BUT DB. DO NOT WANT THE LIABILITY.
 THE WILSONHUT PROPERTY ON OLD LEXINGTON
 ROAD IS VACANT. SPIVY WIDOWED WITH BOYFRIEND
 LIVING AT HER HOME

STORMWATER DATA TO DWQ IN ACTION.
- CAN COPY AND IS PUBLIC RECORD
(FURNISHED COPIES OF MONITORING: 11/10/08 - 4/20/09)

SUPPERS, LORIE L 2259 OLD LEXINGTON RD
(Lived @ 8th & Cass St) (NO and to Vancouver)
w/ 2 sons same

SPINY, Ruby 2 2943 Middleton Dr (for 3rd Dr)
Winston Salem 27107 (same)



SOIL & PLANT ANALYSIS
③ WITH RESIDUES.

② OTHER CONCERNS - LOCAL WINTERWAYS
(CREEKS, DITCHES) AFFECT LOCAL RESIDENTS
FOR PLAYING, FISHING, ETC. - RECORD THE ACCESSIBILITY
SITE RELATED TO CREEK CONCERNS FOR THIS B,
EVEN IF NOT AN HPL CAMBER VLY
LEFT SITE ~1630 FOR JEFFERSON (ONE LEDD)

DOUGLAS BATTERY
(5) NCD 003 213 030

Winston Salem NC 5/11/09
SITE XRF SCREENING

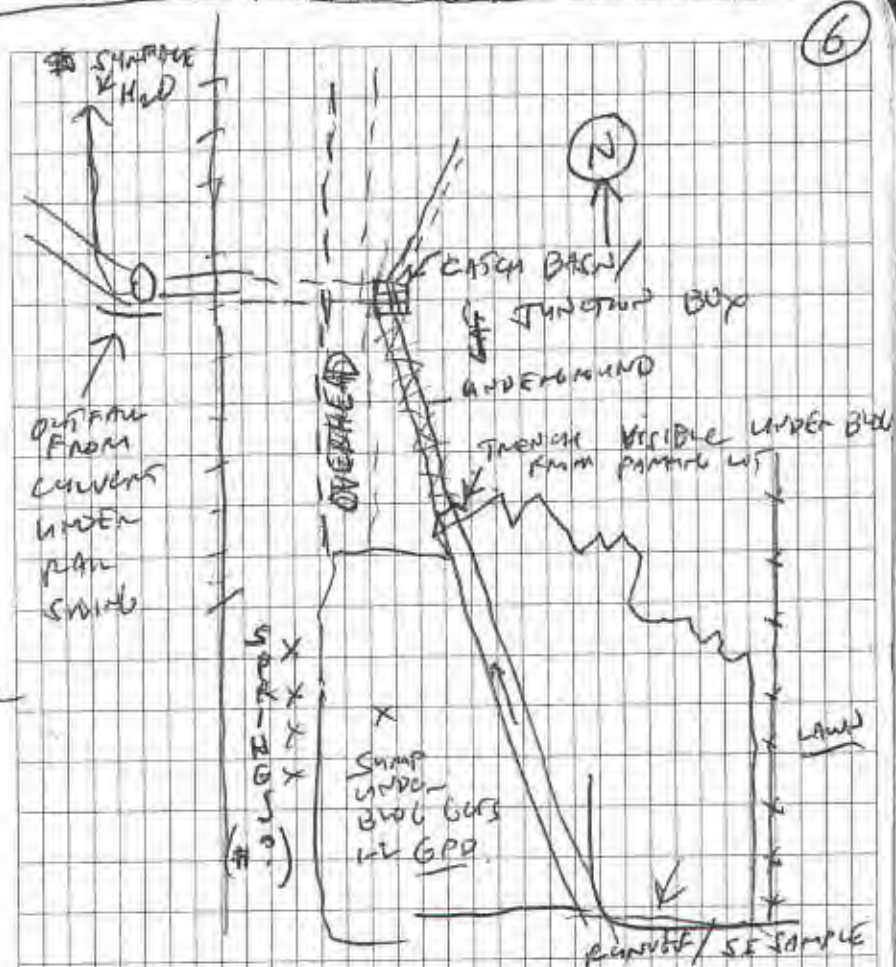
STARLIGHT DRIVE

AL CSORTS REPORTED THAT FACULTY HAD
BAS HOUSES ON GRATED ROOFS, PREVIOUS
EARTH POWER WASH, TOO DEEP, GUTTER
SURFACE PURGE CONTAM. / FORMER
ONFLOW A CONCERN FROM WASHINGTON,
TRAILING TO SOUTH. (NOW A COMMERCIAL PUMP)
CHLORINATED SOLVENT SPIRITS. THEY WROTE
REPORTS, INSTALLED MURS ALONG PROP LINE

Also AT+T BOUTHER WESTING HOUSE THEN FOUND CONTAMINATION. LATER SOUT PART TO D BTH (COPPER LANE). BATH CONTAINS SHOWED SFO A REMAIN BY ENGR

AIRNET NETWORK SYSTEMS
WINSTON SALEM NC
COMBINED SUBSURFACE
INVESTIGATION WORK PLAN
AIRNET NORTH CAROLINA WORKING
LEXINGTON ROAD PLANT 2/24/89
DOL # 0550 062300

TRENCH BENEATH BATTERY PLANT CONVEYS
SURFACE RUNOFF FROM WESTSIDE AREA.
THE SPRINGS ARE ON THE WEST SIDE OF
THE BLOG, NEXT TO THE RR TRACKS.

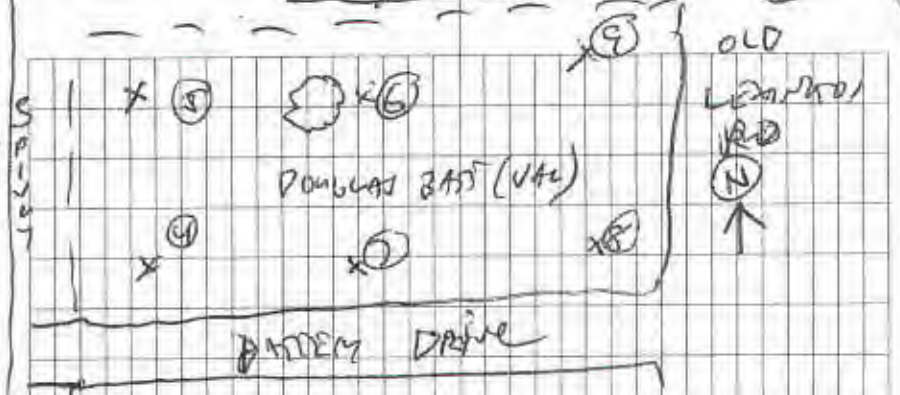


WOODSEN
Drove to CHAMBERLAIN School on Gold Farm Rd
AND OBTAINED KEY TO VEHICLE GARAGE TO
FRAMES PARKING LOT (PAVED AREA) SOUTH OF SCHOOL
TOOK SEDIMENT SAMPLES FROM PARKING LOT

Highway Ramp
Main Culvert
Parking 3R
Paved School Lot (used for regress)
Storm Drain
Sediment Sample 1
Sediment Sample 2
Sediment Sample 3

EMPTY HOUSE (UNOCCUPIED)

(8)



SOURCES SAW THE POOL SOUTH OF BATT IN

CONTAINED	TRACT	HOUSE	IN	205/30.5
LOC	(+/-)	XRF	LOC	(+/-)
40	8	81.8 21.9	56	22 40.5 18.7
41	9	342.4 81.9	57	23 41.8 22.2
42	10	64.8 24.3	58	24 32.7 66.7
43	11	62.9 35.5	59	25 94.1 21.5
44	12	144.4 27.0	DISEN FENCE OF MIDDLETON, S OF BATT DR.	
45	13	115.0 26.8		
46	14	118.0 28.1	60	26 786.6 ± 48.9
47	15	85.3 28.1	MEASURE FENCE W OF MIDDLETON	
48	16	148.7 26.5		
49	17	50 19.7	61	27 648.7 46.3
50	18	101.9 30.4	62	28 1017. 55
51	19	129.5 23.7	63	29 645.6
52	20	55.5 24.2	64	30 246.1 34.9
53	21	47. 16.9	N END (W) OF MIDDLETON SW of MIDDLETON	
54-55	N ↑ PPM		65	31 1296. 73
			66	32 182 ↑ PPM

05/11/09

DOUGLAS BATTERY NCD 003 213 030

XRF SOIL
SCHEDULE

XRF #

DESC

Pb

END

30 ① CURET SW of PATTERN
BATTERY ABOVE LOT OUTLINE 12.5

31 ② REPEAT XRF → PD

32 ③ REPEAT XRF → 38.0

33 ④ REPEAT XRF → 16.2

34 ⑤ BATTERY OFFERED LOT
OUTLINE AND HILL

35 ⑥ CALVERAS FROM FIRE
REPEAT XRF

36 ⑦ PROPERTY N OF
BATTERY 194

37 ⑧ FROM STREET

38 ⑨ FROM STREET

39 ⑩ SEE GAC.

40 ⑪ SEE GAC.

41 ⑫ SEE GAC.

42 ⑬ SEE GAC.

BRACE FOR LUNCH 1300-1400 (incl drive time
to m.s. each way)

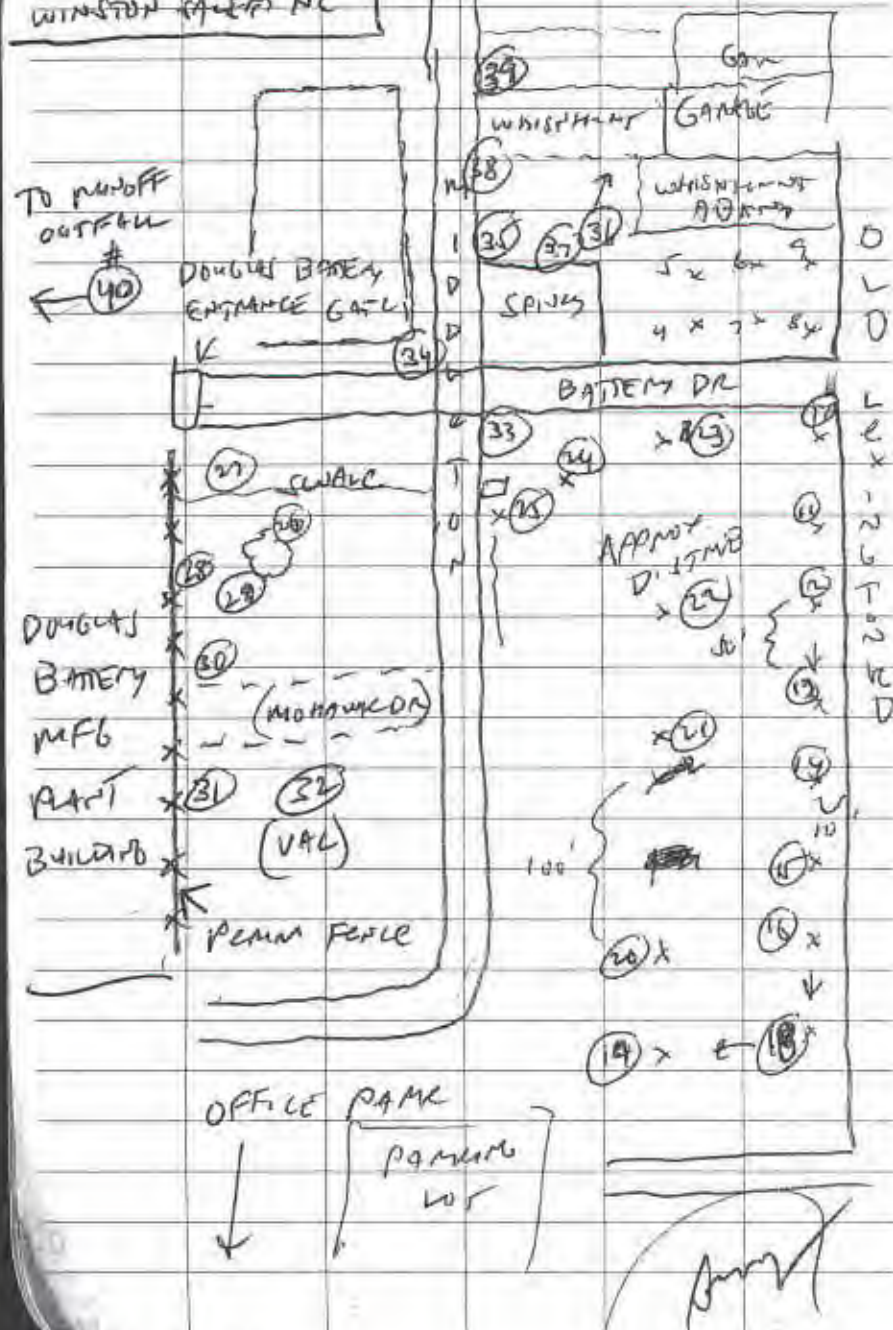
MET W/ MR CSOTOL AGARD, THEN spoke w/
MRS. SPINNEY. SHE WAS CONCERNED THAT IF
WE STAYED AND FOUND CONTAMINATION THAT
HER PROPERTY MIGHT BE CONDEMNED,
AND DECIDED TO HAVE XRF TESTING DONE
ON HER PROPERTY

DOUGLAS BATTERY
NCD 003 213 030

5/16
09

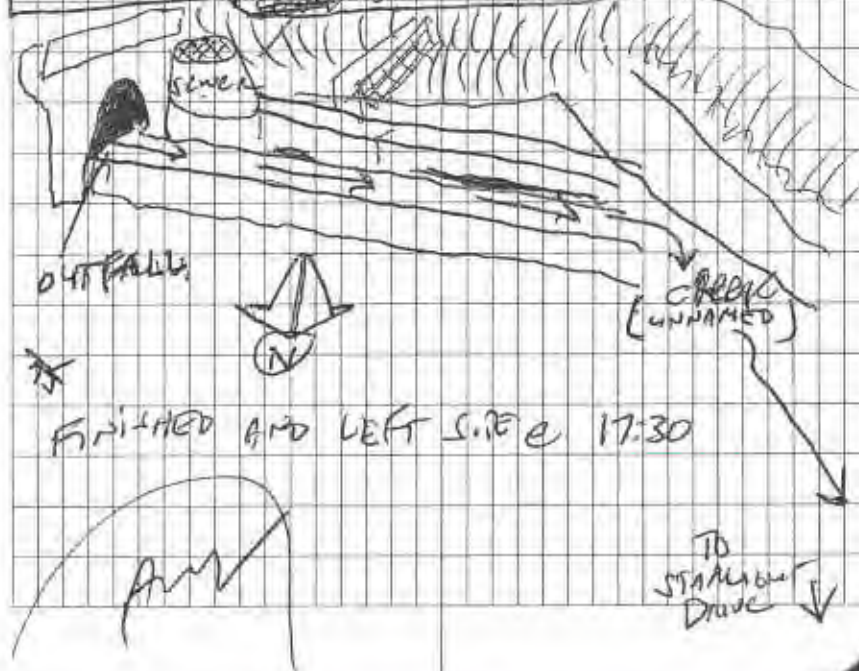
DOUGLAS BATTERY
NCD 003 213 030
WINSTON SALEM NC

XRF SOIL SCREENING ON 5/11/09 (9)



10

XRF	LOC	DESCRIPTION	Pb	+/-
67	33	ACROSS BATT DR FROM SP 45	105.5	21.7
68	34	ACROSS MIDDLEMAN FENCE	382.3	35.7
69	35	NW OF SILEY	135.1	28.4
70	36	NE OF SPIN, NEAR FENCE	396.8	
71	37	LOT N OF SPIN	253	29.5
72	38	CORNER OF DB AND WHIS	125.5	33.4
		LOT 1 NW 1/4 MIDDLEMAN		
73	39	NW OUTSIDE WHISMAN	103.4	24.3
		ON MIDDLEMAN		
74	40	SOIL/SCB SAMPLE COLLECTED AT		
		SITE'S WESTERN EDGE, 30 FT BELOW		
		RAILROAD CULVERT OUTFLOW TO SURFACE H ₂ O		
76	SAME	Pb = 212.1 ± 31.5		
		Pb = 180.7 ± 27.8		



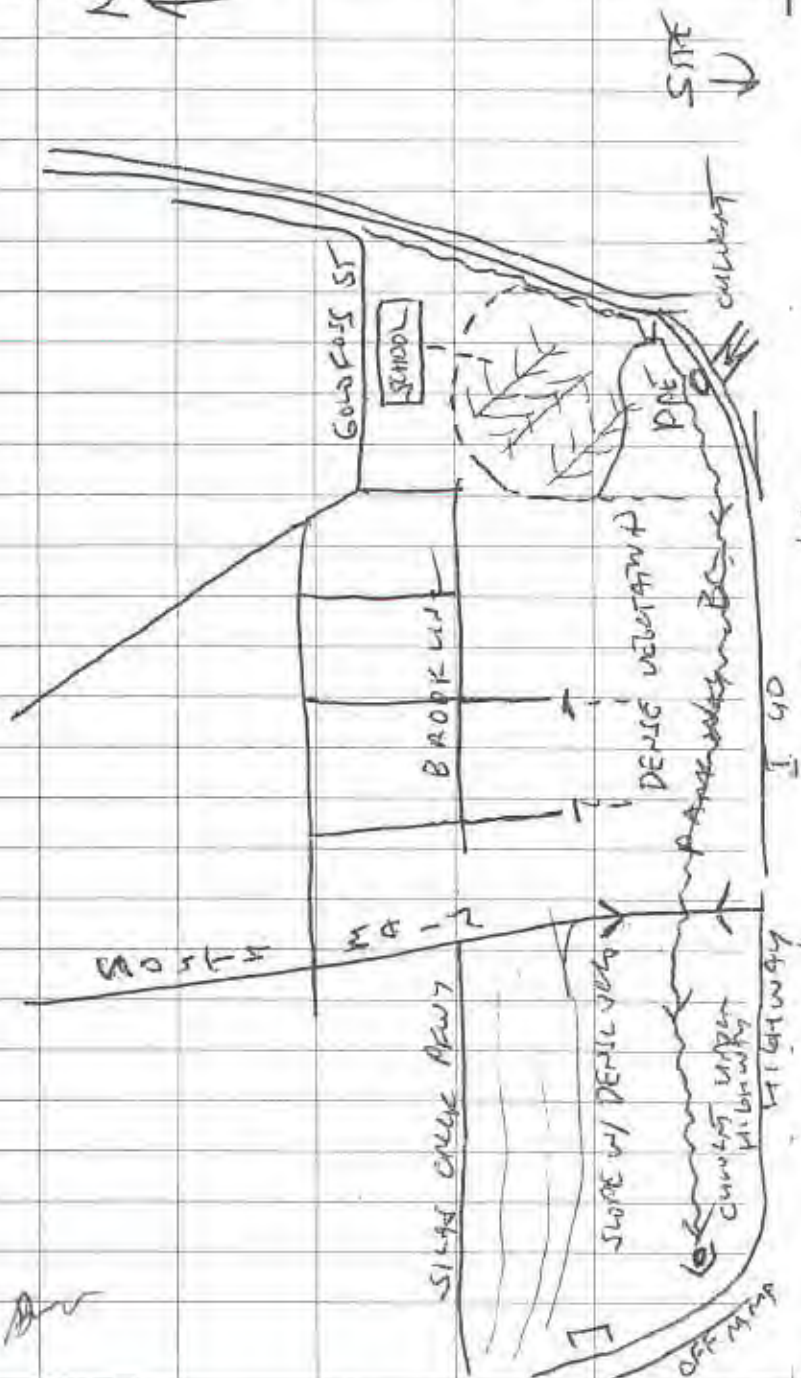
(11)

DOUGLAS BATTERY NCD 003 213 030

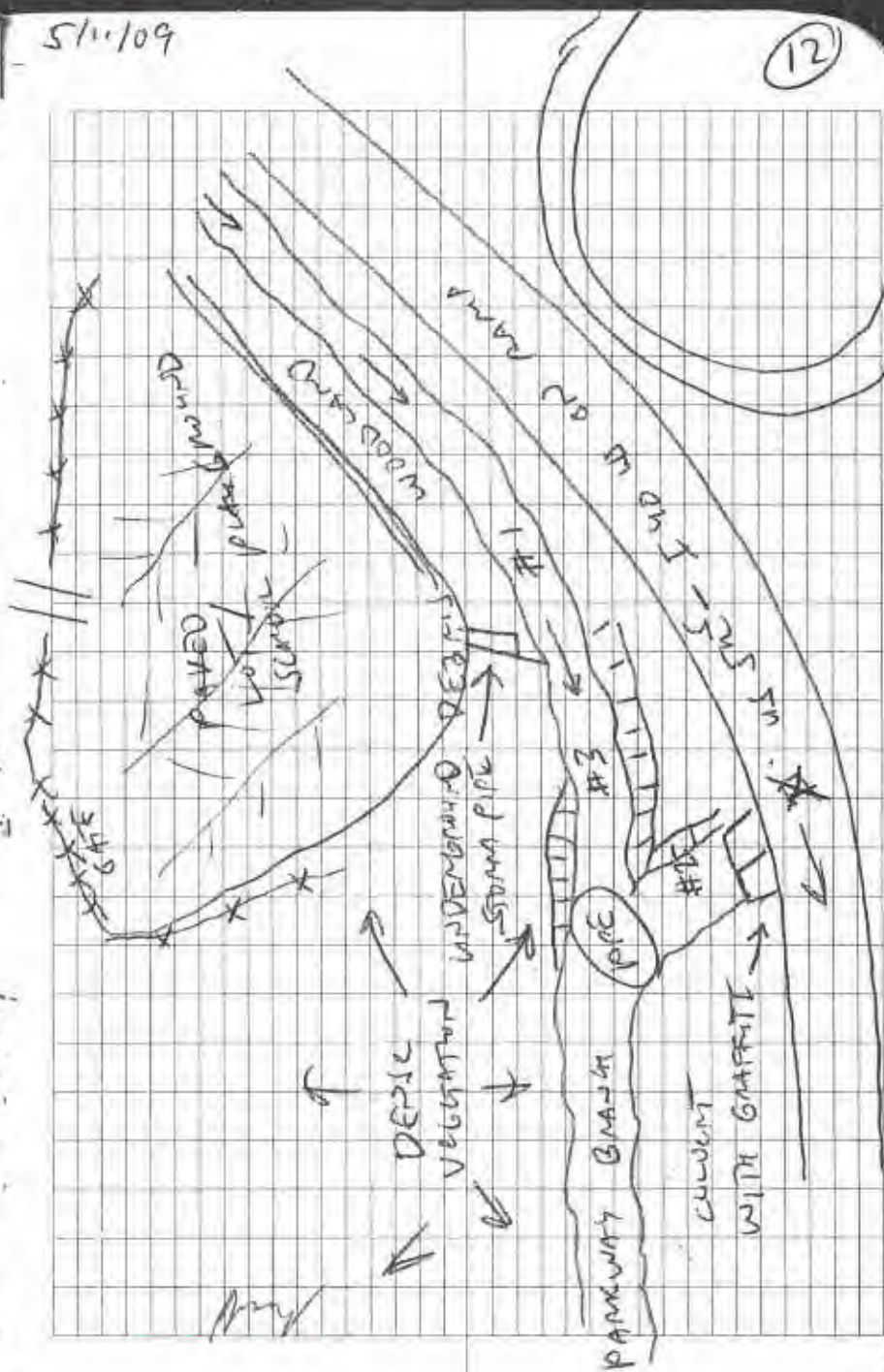
5/11/09

2 ←

WINSTON-SALEM



(12)



REFERENCE 6

MEMORANDUM

To: File
From: Stuart F. Parker, Hydrogeologist
Date: June 12, 2009
Subject: Douglas Battery Mfg Co.
NCD 003 213 030
Winston-Salem, Forsyth County, NC
Historical Aerial Photo Analysis

On June 11 and 12, 2009, SFP visited the North Carolina Division of Highways, Photogrammetry Unit to examine historical aerial photos covering the site and surrounding neighborhood. SFP used a reel-to-reel light table to examine 9"x 9" negatives from missions spanning the time period May 1960 to June 1992.

May 1960 (Mission 17, Exposure 145, 1"=1000'):

The northern/western portion of the site's (angular) main battery-manufacturing plant was the only large structure visible on site. The area directly southeast - later to be occupied by the remainder of the building - contained a small, roughly circular pond. Smoke from a stack to the southwest was drifting northeast across the pond. To the east and northeast of the battery plant, four city blocks - north and south of Battery Drive and east and west of Middleton Street - contained between twenty and thirty small houses. The block north of Battery drive and east of Middleton also appeared to contain the same commercial structures existing there at present.

Rather than curving from north southwest around the site, Starlight Drive continued west-northwest along the future corridor of Interstate 40. The surface drainage located west of the battery plant passed northwest under Starlight Drive, then continued west along the north side of the road - similar to its present course along I-40. A large textile mill (previously identified on Sanborn Co. fire-insurance maps) was visible north of Starlight Drive and the drainage.

March 18, 1962 (Mission 195, Exposure 56, 1"=1000'):

The Douglas Battery plant, residences and textile mill appeared similar to the previous photo. South of the battery plant, a large commercial/industrial facility (Westinghouse) was visible, similar to its present-day appearance.

(continued)

January 5, 1969 (M. 741, Exp. 39, 1"=4000'):

Additional structures had been constructed at the Douglas Battery plant. The neighborhood appeared similar to previous photos.

May 27, 1970 (M. 877, Exps. 5-7, 1"=500'); March 24, 1971 (M. 933, Exps. 9-11, 1"=500'):

Highway 40 and its interchange with NC Highway 52 were under construction. The site and neighborhood otherwise appeared similar to previous photos.

February 18, 1980 (M. 1544, Exp. 9, 1"=1000'); April 11, 1980 (M. 1564, Exps. 8-9, 1"=1000'):

Highway construction was complete. The majority of residences on the blocks south of Battery Drive and/or west of Middleton Street had been removed. The block north of Battery Drive and east of Middleton Street appeared similar to its present-day configuration, with three residences, and businesses on the NE corner.

June 6, 1992 (M. 2951, Exps. 5-6, 1"=500'):

The site and neighborhood appeared similar to previous photos.

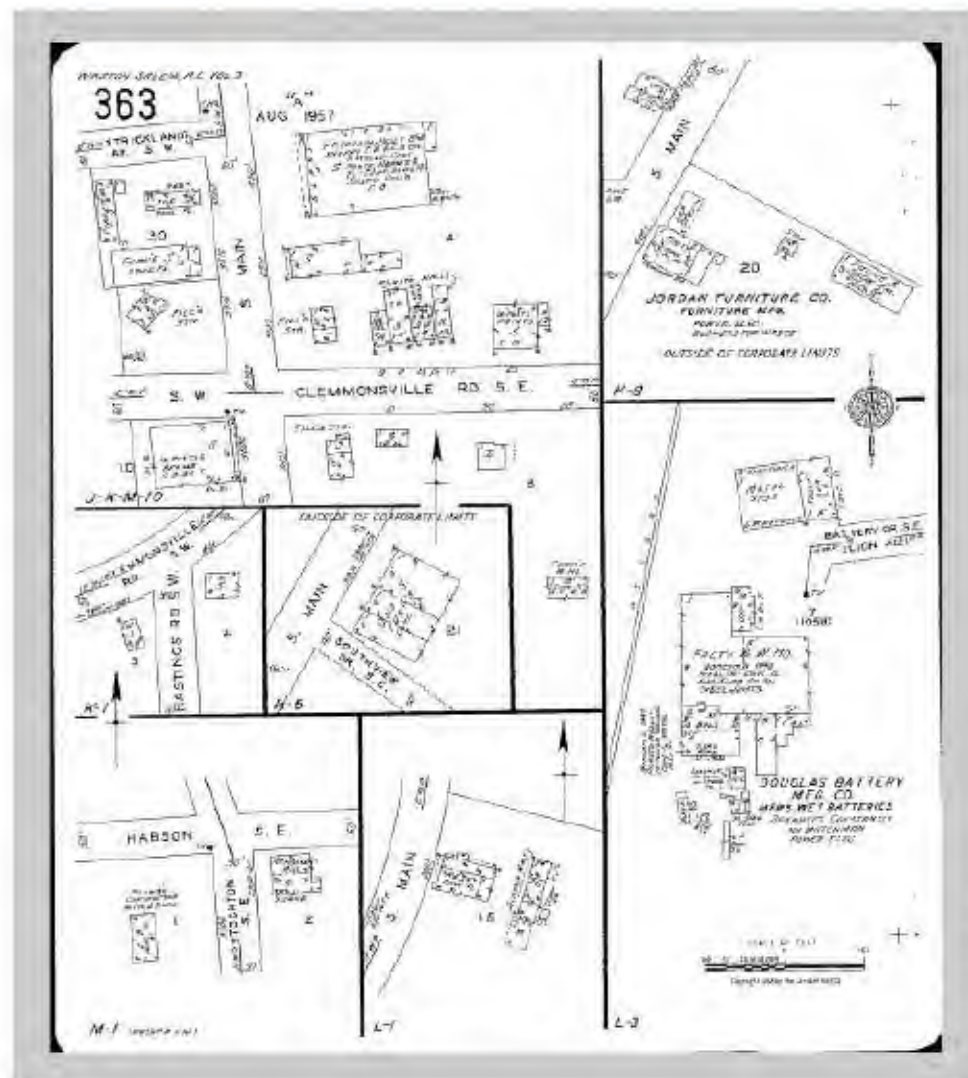
REFERENCE 7

Click on map to: ☒ zoom in ☐ re-center

Zoom 75%

Select window size for viewing: ☐ ☐ ☐ ☐ ☐

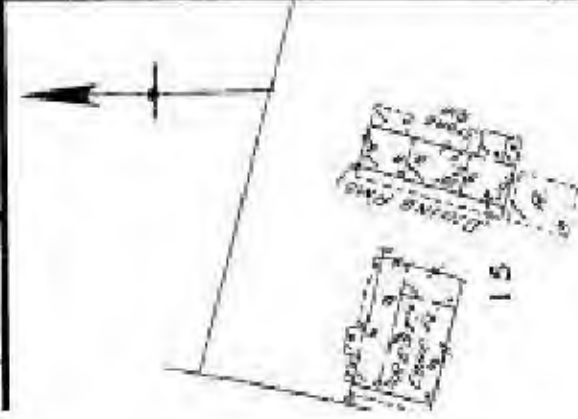
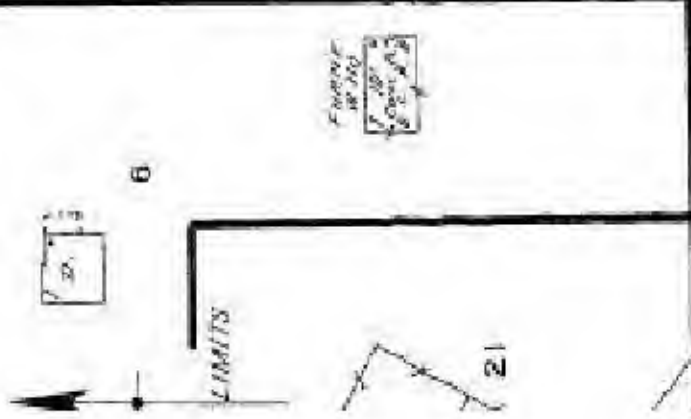
Winston-Salem 1917-1958 Vol. 3, 1917



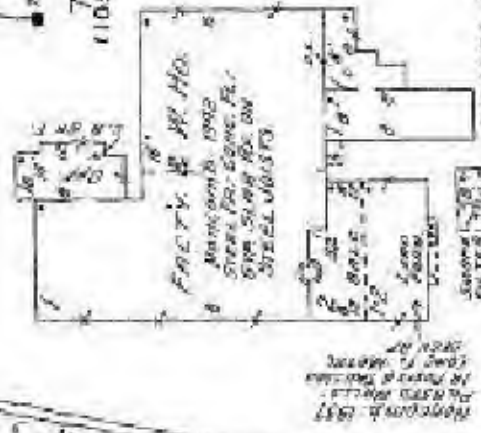
377 17' 0" 25' 28' 20'

RD. S. E.

K-8



OUTSIDE OF CORPORATE LIMITS



DOUGLAS BATTERY
MFG. CO.
MFRS. WET BATTERIES
OPERATES CONSTANTLY
NO WATER-POWER-POWER-ELEC

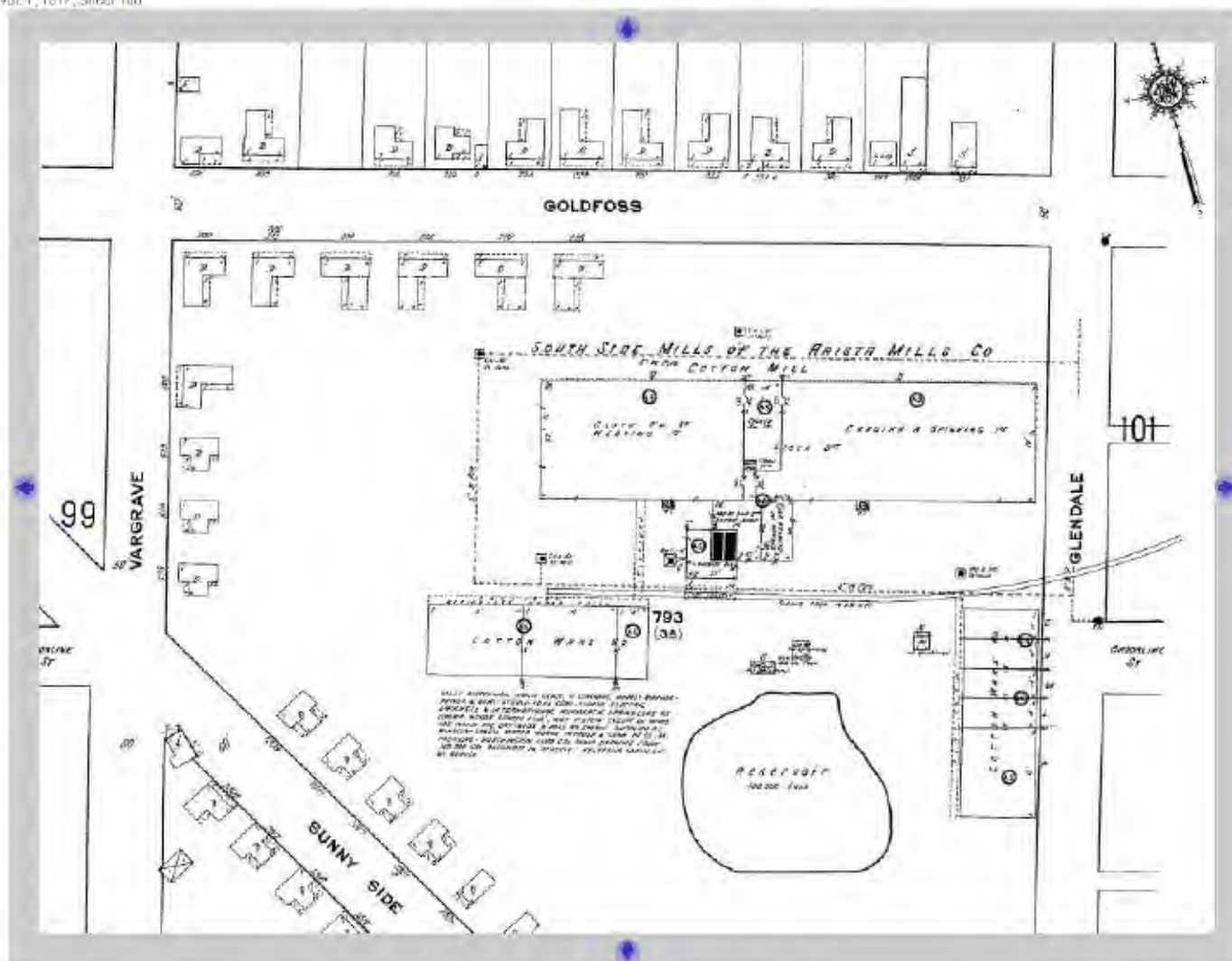


Copyright 1958 by the American Map Co.

Click on map to: ☒ zoom in ☐ re-center Zoom: 100%

Select window size for viewing: ☐ ☐ ☐ ☐ ☐ ☐

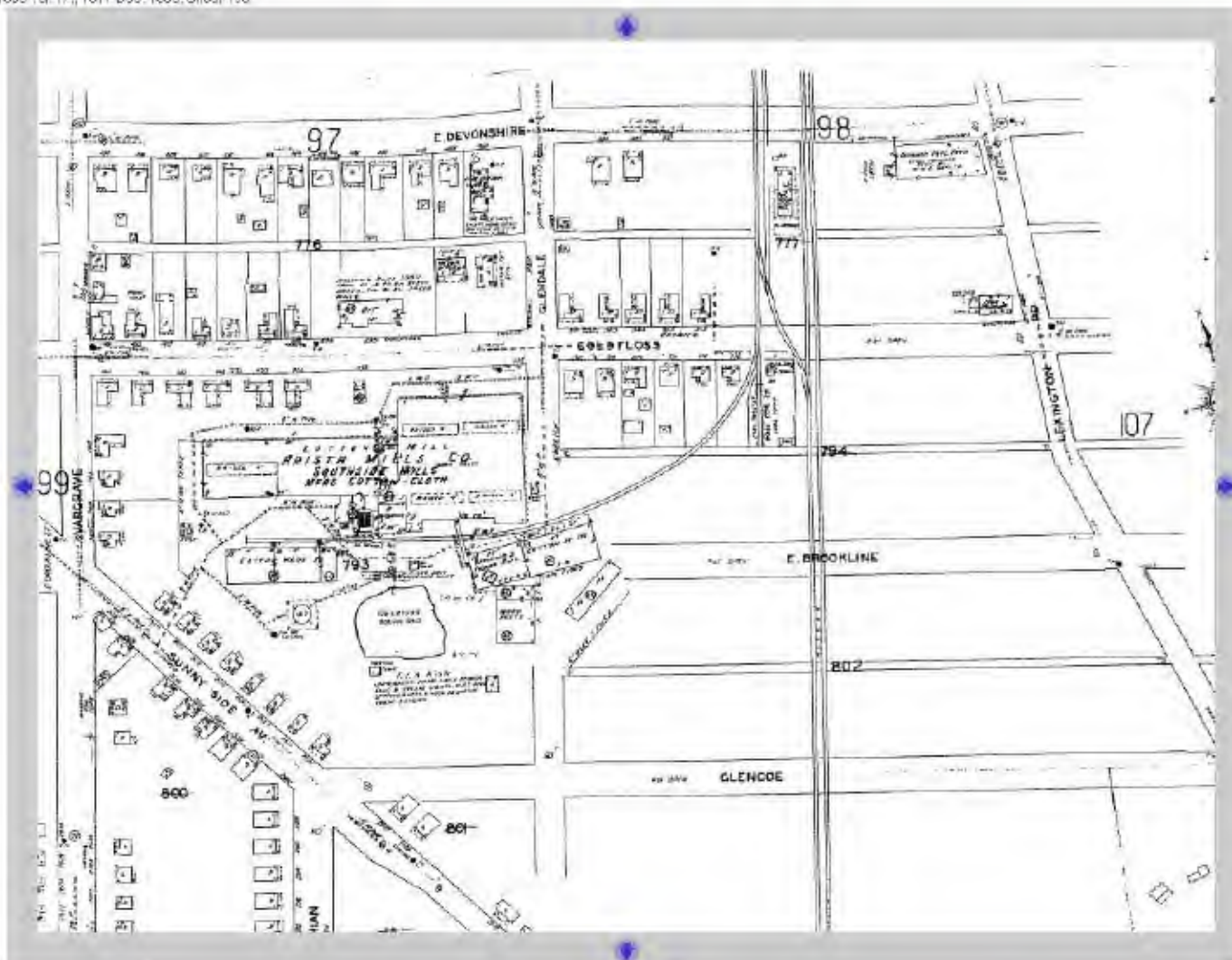
Winston-Salem 1897-1929 vol.1, 1897, Sheet 100



Click on map to: ☒ zoom in ☐ re-center Zoom: 100%

Select window size for viewing: ☒ ☐ ☐ ☐ ☐

Winston-Salem 1917-Dec, 1950 Vol. 1A, 1917-Dec, 1950 Sheet 100



REFERENCE 8



http://iaspub.epa.gov/enviro/tris_control.tris_print?tris_id=27107DGLSB500BA

Last updated on Wednesday, June 17th, 2009.

Toxics Release Inventory (TRI)

You are here: [EPA Home](#) » [Envirofacts](#) » [TRI](#) » [Envirofacts Report](#)

Envirofacts Report

Report
an
Error

Query executed on JUN-17-2009
Results are based on data extracted on MAR-19-2009

Click on "View Facility Information" to view EPA Facility information for the facility.

<u>Facility Name:</u>	DOUGLAS BATTERY MANUFACTURING CO	<u>Mailing Name:</u>	DOUGLAS BATTERY MANUFACTURING CO		
<u>Address:</u>	500 BATTERY DR WINSTON-SALEM NC 27107	<u>Mailing Address:</u>	500 BATTERY DR WINSTON-SALEM NC 27107		
<u>County:</u>	FORSYTH	<u>Region:</u>	4		
<u>Facility Information:</u>	View Facility Information	<u>TRI ID:</u>	27107DGLSB500BA	<u>DUNS Number:</u>	003213030
<u>TRI Preferred Latitude:</u>	36.048889	<u>FRS ID</u>	110000345387		
		<u>TRI Preferred Longitude:</u>	80.234167		
<u>Public Contact:</u>	G. WALKER DOUGLAS	<u>Phone:</u>	3366507112		
<u>Parent Company:</u>	NA	<u>Parent DUNS:</u>	NA		

Starting with Reporting Year 2006, TRI Facilities began reporting NAICS codes, instead of SIC codes, to identify their Primary Business Activities.

NAICS Codes for 2007

NAICS CODE	PRIMARY	NAICS DESCRIPTION
335911	YES	Storage Battery Manufacturing

The above information comes from 2007, which was the last year NAICS code data was reported for this facility. The earliest NAICS code data on file for this facility was reported in 1988.

[Map this facility](#)

Map this facility using one of Envirofact's mapping utilities.

Besides TRI, this facility also does the following:

- has reported air releases under the Clean Air Act
- has permits to discharge to water

More information about these additional regulatory aspects of this facility can be found by pressing the other regulatory data button below.

[Other Regulatory Data](#)

Total Aggregate Releases of TRI Chemicals to the Environment:

For all releases estimated as a range, the mid-point of the range was used in these calculations. This table summarizes the releases reported by the facility. **NR** - signifies nothing reported by this facility for the corresponding medium.

Total Aggregate Releases of TRI Chemicals excluding Dioxin and Dioxin-like Compounds (Measured in Pounds)

Media	2007	2006	2005	2004	2003	2002	2001	2000	1999	1998	1997	1996	1995
Air Emissions	108	105	234	694	928	1026	1046	1141	1055	1025	966	1366	1200
Surface Water Discharges	55	244	208	213	410	369	528	599	603	524	402	492	494
Releases to Land	0	0	0	NR	NR	NR	NR	NR	NR	NR	NR	5100	5
Underground Injection	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
Total On-Site Releases	163	349	442	907	1338	1395	1574	1740	1658	1549	1368	6958	1699
Transfer Off-Site to Disposal	346	226	170	86	193	285	63	116	1005	1033	352	442	9978
Total Releases	509	575	612	993	1531	1680	1637	1856	2663	2582	1720	7400	11677

[Graphic Summary of this Table](#)

Total Aggregate Releases of Dioxin and Dioxin-like Compounds (Measured in Grams)

Media	2007	2006	2005	2004	2003	2002	2001	2000	1999	1998	1997	1996	1995
Air Emissions	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
Surface Water Discharges	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
Releases to Land	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
Underground Injection	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
Total On-Site Releases	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR

Transfer Off-Site to Disposal	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
Total Releases	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR

[Graphic Summary of this Table](#)

TRI Chemicals Reported on Form A:

Please note that there were no chemicals reported on Form A for this facility

NOTE:

All chemicals reported below have release or transfer amounts greater than zero. To see a list of all chemicals reported by this facility click [here](#).

Names and Amounts of Chemicals Released to the Environment by Year.

For all releases estimated as a range, the mid-point of the range was used in these calculations.
NR - signifies nothing reported for this facility by the corresponding medium. Rows with all "0" or "NR" values were not listed.

<u>Chemical Name</u>	<u>Media</u>	<u>Unit Of Measure</u>	2007	2006	2005	2004	2003	2002	2001	2000	1999	1998	1997
ANTIMONY (TRI Chemical ID: 007440360)	AIR FUG	Pounds	1	0	1	2	3	2	3	2	1	2	
ANTIMONY (TRI Chemical ID: 007440360)	AIR STACK	Pounds	0	0	2	5	5	5	6	7	4	2	
ANTIMONY (TRI Chemical ID: 007440360)	DISP METALS	Pounds	5	2	2	1	2	3	1	1	5	8	
ANTIMONY (TRI Chemical ID: 007440360)	DISP NON METALS	Pounds	NR	NR	NR	NR	NR	NR	0	0	NR	0	
ANTIMONY (TRI Chemical ID: 007440360)	OTH DISP	Pounds	0	0	0	NR	NR	NR	NR	NR	NR	NR	
ANTIMONY (TRI Chemical ID: 007440360)	WATER	Pounds	1	3	3	3	3	3	4	5	3	3	
ARSENIC (TRI Chemical ID: 007440382)	AIR STACK	Pounds	0	0	0	0	0	0	0	0	0	2	
ARSENIC (TRI Chemical ID: 007440382)	DISP NON METALS	Pounds	NR	NR	NR	NR	NR	NR	0	0	NR	0	

007440382)

BARIUM COMPOUNDS (TRI Chemical ID: N040)	<u>AIR FUG</u>	Pounds	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
BARIUM COMPOUNDS (TRI Chemical ID: N040)	<u>AIR STACK</u>	Pounds	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
LEAD COMPOUNDS (TRI Chemical ID: N420)	<u>AIR FUG</u>	Pounds	33	37	42	167	331	341	321	295	210	356	
LEAD COMPOUNDS (TRI Chemical ID: N420)	<u>AIR STACK</u>	Pounds	74	68	189	520	589	678	716	837	840	663	
LEAD COMPOUNDS (TRI Chemical ID: N420)	<u>DISP METALS</u>	Pounds	341	224	168	85	151	282	43	80	982	980	
LEAD COMPOUNDS (TRI Chemical ID: N420)	<u>DISP NON METALS</u>	Pounds	NR	NR	NR	NR	40	NR	19	35	18	45	
LEAD COMPOUNDS (TRI Chemical ID: N420)	<u>OTH DISP</u>	Pounds	0	0	0	NR	NR	NR	NR	NR	NR	NR	
LEAD COMPOUNDS (TRI Chemical ID: N420)	<u>WATER</u>	Pounds	54	241	205	210	407	366	524	594	600	521	
SULFURIC ACID (1994 AND AFTER "ACID AEROSOLS" ONLY) (TRI Chemical ID: 007664939)	<u>AIR FUG</u>	Pounds	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	
SULFURIC ACID (1994 AND AFTER	<u>AIR STACK</u>	Pounds	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	

"ACID
AEROSOLS"
ONLY)
(TRI

Chemical ID:
007664939)

SULFURIC
ACID (1994
AND AFTER
"ACID
AEROSOLS"
ONLY)
(TRI

Chemical ID:
007664939)

OTH
DISP

Pounds

NR

NR

NR

NR

NR

NR

NR

NR

NR

NR

Discharge of Chemicals into Streams or Bodies of Water:

For all releases estimated as a range, the mid-point of the range was used in these calculations.
Rows with Release Amount equal to "0" were not listed.

<u>Chemical Name</u>	<u>Year</u>	<u>Unit Of Measure</u>	<u>Release Amount</u>	<u>Stream Or Body of Water</u>
ANTIMONY (TRI Chemical ID: 007440360)	2007	Pounds	1	SALEM CREEK
ANTIMONY (TRI Chemical ID: 007440360)	2006	Pounds	3	SALEM CREEK
ANTIMONY (TRI Chemical ID: 007440360)	2005	Pounds	3	SALEM CREEK
ANTIMONY (TRI Chemical ID: 007440360)	2004	Pounds	3	SALEM CREEK
ANTIMONY (TRI Chemical ID: 007440360)	2003	Pounds	3	SALEM CREEK
ANTIMONY (TRI Chemical ID: 007440360)	2002	Pounds	3	SALEM CREEK
ANTIMONY (TRI Chemical ID: 007440360)	2001	Pounds	4	SALEM CREEK
ANTIMONY (TRI Chemical ID: 007440360)	2000	Pounds	5	SALEM CREEK
ANTIMONY (TRI Chemical ID: 007440360)	1999	Pounds	3	SALEM CREEK

ANTIMONY (TRI Chemical ID: 007440360)	1998	Pounds	3	SALEM CREEK
ANTIMONY (TRI Chemical ID: 007440360)	1997	Pounds	2	SALEM CREEK
ANTIMONY (TRI Chemical ID: 007440360)	1996	Pounds	2	SALEM CREEK
ANTIMONY (TRI Chemical ID: 007440360)	1995	Pounds	4	SALEM CREEK
ANTIMONY (TRI Chemical ID: 007440360)	1994	Pounds	3	SALEM CREEK
LEAD COMPOUNDS (TRI Chemical ID: N420)	2007	Pounds	54	SALEM CREEK
LEAD COMPOUNDS (TRI Chemical ID: N420)	2006	Pounds	241	SALEM CREEK
LEAD COMPOUNDS (TRI Chemical ID: N420)	2005	Pounds	205	SALEM CREEK
LEAD COMPOUNDS (TRI Chemical ID: N420)	2004	Pounds	210	SALEM CREEK
LEAD COMPOUNDS (TRI Chemical ID: N420)	2003	Pounds	407	SALEM CREEK
LEAD COMPOUNDS (TRI Chemical ID: N420)	2002	Pounds	366	SALEM CREEK
LEAD COMPOUNDS (TRI Chemical ID: N420)	2001	Pounds	524	SALEM CREEK
LEAD COMPOUNDS (TRI Chemical ID: N420)	2000	Pounds	594	SALEM CREEK
LEAD COMPOUNDS (TRI Chemical ID: N420)	1999	Pounds	600	SALEM CREEK
LEAD COMPOUNDS (TRI Chemical ID: N420)	1998	Pounds	521	SALEM CREEK
LEAD COMPOUNDS (TRI Chemical ID: N420)	1997	Pounds	400	SALEM CREEK
LEAD COMPOUNDS (TRI Chemical ID: N420)	1996	Pounds	490	SALEM CREEK
LEAD COMPOUNDS (TRI Chemical ID: N420)	1995	Pounds	490	SALEM CREEK
LEAD COMPOUNDS (TRI Chemical ID: N420)	1994	Pounds	490	SALEM CREEK
LEAD COMPOUNDS (TRI Chemical ID: N420)	1993	Pounds	5	SALEM CREEK

Transfer of Chemicals to Off-Site Locations other than POTWs:

Please note that transfer amounts are not included in release totals shown above. For all releases estimated as a range, the mid-point of the range was used in these calculations. Rows with Total Transfer Amount equal to "0" were not listed.

<u>Chemical Name</u>	<u>Year</u>	<u>Unit Of Measure</u>	<u>Total Transfer Amount</u>	<u>Transfer Site Name and Address</u>	<u>Type Of Waste Management</u>
ANTIMONY (TRI Chemical ID: 007440360)	2007	Pounds	5829	ENVIROFOCUS TECHNOLOGIES 1901 NORTH 66TH STREET TAMPA, FL 33619	Metals Recovery
ANTIMONY (TRI Chemical ID: 007440360)	2007	Pounds	5	HERITAGE ENVIRONMENTAL SERVICE 4132 POMPANO ROAD CHARLOTTE, NC 28216	Solidification/Stabilization-Metals and Metal Compounds only
ANTIMONY (TRI Chemical ID: 007440360)	2007	Pounds	7712	GOPHER RESOURCE CORPORATION 3385 SOUTH HIGHWAY 149 EAGAN, MN 55121	Metals Recovery
ANTIMONY (TRI Chemical ID: 007440360)	2006	Pounds	9512	ENVIROFOCUS 1901 NORTH 66TH STREET TAMPA, FL 33619	Metals Recovery
ANTIMONY (TRI Chemical ID: 007440360)	2006	Pounds	2	HERITAGE ENVIRONMENTAL SERVICE 4132 POMPANO ROAD CHARLOTTE, NC 28216	Solidification/Stabilization-Metals and Metal Compounds only
ANTIMONY (TRI Chemical ID: 007440360)	2006	Pounds	24506	GOPHER RESOURCE CORPORATION 3385 SOUTH HIGHWAY 149 EAGAN, MN 55121	Metals Recovery
ANTIMONY (TRI Chemical ID: 007440360)	2005	Pounds	298	NOVA LEAD, INC. 1200 GARNIER VILLE STECATHERINE, JOL 1EO	Metals Recovery
ANTIMONY (TRI Chemical ID: 007440360)	2005	Pounds	23105	GULF COAST RECYCLING 1901 NORTH 66TH STREET TAMPA, FL 33619	Metals Recovery

Summary of Waste Management Activities

Please note that chemical amounts shown here are not included in Total Aggregate Releases shown above.

Summary of Waste Management Activities excluding Dioxin and Dioxin-like Compounds (Measured in Pounds)

<u>Year</u>	<u>On-Site Recycling</u>	<u>Off-Site Recycling</u>	<u>On-Site Energy Recovery</u>	<u>Off-Site Energy Recovery</u>	<u>On-Site Treatment</u>	<u>Off-Site Treatment</u>	<u>Total Amount</u>
2006	0	2883170	0	0	0	0	2883170
2007	0	869208	0	0	0	0	869208
2008 (Projected)	0	912900	0	0	0	0	912900
2009 (Projected)	0	957640	0	0	0	0	957640

Summary of Waste Management Activities for Dioxin and Dioxin-like Compounds (Measured in Grams)

This facility did not report any waste management activities for Dioxin and Dioxin-like Compounds.

Chemicals Under Waste Management:

Please note that chemical amounts shown here are not included in the Total Aggregate Releases shown above. Transfers to Publicly Owned Treatment Works are listed on a separate table.

<u>Chemical Name</u>	<u>Year</u>	<u>Unit Of Measure</u>	<u>On-Site Recycling</u>	<u>Off-Site Recycling</u>	<u>On-Site Energy Recovery</u>	<u>Off-Site Energy Recovery</u>	<u>On-Site Treated</u>	<u>Off-Site Treated</u>
ANTIMONY	2006	Pounds	0	34018	0	0	0	0
	2007	Pounds	0	13541	0	0	0	0
	2008 (Projected)	Pounds	0	14200	0	0	0	0
	2009 (Projected)	Pounds	0	14900	0	0	0	0
ARSENIC	2006	Pounds	0	1670	0	0	0	0
	2007	Pounds	0	670	0	0	0	0
	2008 (Projected)	Pounds	0	700	0	0	0	0
	2009 (Projected)	Pounds	0	740	0	0	0	0
LEAD COMPOUNDS	2006	Pounds	0	2847482	0	0	0	0
	2007	Pounds	0	854997	0	0	0	0
	2008 (Projected)	Pounds	0	898000	0	0	0	0

	2009 (Projected)	Pounds	0	942000	0	0	0	0
--	---------------------	--------	---	--------	---	---	---	---

Transfer of Chemicals to Publicly Owned Treatment Works (POTW):

Please note that transfer amounts are not included in the Total Aggregate Releases shown above. For all releases estimated as a range, the mid-point of the range was used in these calculations.

<u>Chemical Name</u>	<u>Year</u>	<u>Unit Of Measure</u>	<u>Total Transfer Amount</u>
LEAD COMPOUNDS	1987	Pounds	5
LEAD COMPOUNDS	1988	Pounds	2
LEAD COMPOUNDS	1989	Pounds	10
LEAD COMPOUNDS	1990	Pounds	9
LEAD COMPOUNDS	1991	Pounds	5
LEAD COMPOUNDS	1992	Pounds	11
LEAD COMPOUNDS	1993	Pounds	12
LEAD COMPOUNDS	1994	Pounds	13
LEAD COMPOUNDS	1995	Pounds	12
LEAD COMPOUNDS	1996	Pounds	10
LEAD COMPOUNDS	1997	Pounds	13
LEAD COMPOUNDS	1998	Pounds	13
LEAD COMPOUNDS	1999	Pounds	7
LEAD COMPOUNDS	2000	Pounds	8
LEAD COMPOUNDS	2001	Pounds	6
LEAD COMPOUNDS	2002	Pounds	7
LEAD COMPOUNDS	2003	Pounds	4
LEAD COMPOUNDS	2004	Pounds	3
LEAD COMPOUNDS	2005	Pounds	2.4
LEAD COMPOUNDS	2006	Pounds	2
LEAD COMPOUNDS	2007	Pounds	4
SODIUM SULFATE (SOLUTION)	1987	Pounds	163000

Publicly Owned Treatment Works (POTW) that Chemicals were Transferred to:

<u>Chemical Name</u>	<u>Year</u>	<u>POTW Name and Address</u>
<u>ANTIMONY</u>	1987	ARCHIE ELLEDGE WASTEWATER, TREATMENT PLANT 2799 GRIFFITH ROAD WINSTON-SALEM, NC 27103
<u>ANTIMONY</u>	1988	ARCHIE ELLEDGE WASTEWATER, TREATMENT PLANT 2799 GIFFITH RD. WINSTON, NC 27103



<u>ANTIMONY</u>	1989	ARCHIE ELLEDGE WWTP 2799 GRIFFITH RD. WINSTON-SALEM, NC 27103
<u>ANTIMONY</u>	1990	ARCHIE ELLEDGE WWTP 2799 GRIFFIN RD WINSTON-SALEM, NC 27103
<u>ANTIMONY</u>	1991	ARCHIE ELLEDGE WWTP 2799 GRIFFIN RD. WINSTON-SALEM, NC 27103
<u>ANTIMONY</u>	1992	ARCHIE ELLEDGE WWTP 2799 GRIFFIN RD. WINSTON-SALEM, NC 27103
<u>ANTIMONY</u>	1993	ARCHIE ELLEDGE WASTEWATER TREA, TMENT PLANT 2799 GRIFFIN RD. WINSTON-SALEM, NC 27103
<u>ANTIMONY</u>	1994	ARCHIE ELLEDGE WASTEWATER TREA, TMENT PLANT 2799 GRIFFIN RD. WINSTON-SALEM, NC 27103
<u>ANTIMONY</u>	1995	ARCHIE ELLEDGE WASTEWATER TREA, TMENT PLANT 2799 GRIFFIN RD. WINSTON-SALEM, NC 27103
<u>ANTIMONY</u>	1996	ARCHIE ELLEDGE WASTEWATER, TREATMENT PLANT 2799 GRIFFIN RD. WINSTON-SALEM, NC 27103
<u>ANTIMONY</u>	1997	ARCHIE ELLEDGE WASTEWATER TREA, TMENT PLANT 2799 GRIFFIN RD. WINSTON-SALEM, NC 27103
<u>ANTIMONY</u>	1998	ARCHIE ELLEDGE WASTEWATER TREATMENT PLANT 2799 GRIFFIN RD. WINSTON-SALEM, NC 27103
<u>ANTIMONY</u>	1999	ARCHIE ELLEDGE WASTEWATER TREATMENT PLANT 2799 GRIFFIN RD. WINSTON-SALEM, NC 27103
<u>ANTIMONY</u> Non Production Releases:	2000	ARCHIE ELLEDGE WASTEWATER TREATMENT PLANT 2799 GRIFFIN RD. WINSTON-SALEM, NC 27103

This report shows the quantities of the chemicals released to the environment by reporting year as a result of remedial actions, catastrophic events, or other one-time events not associated with production processes. Chemicals with zero release amounts are not shown.

<u>Chemical Name</u>	<u>Reporting Year</u>	<u>Unit Of Measure</u>	<u>Release Quantity</u>
ANTIMONY	1997	Pounds	2
ANTIMONY	1996	Pounds	2
ANTIMONY	1995	Pounds	74
ARSENIC	1995	Pounds	4
LEAD COMPOUNDS	2003	Pounds	100
LEAD COMPOUNDS	2001	Pounds	3
LEAD COMPOUNDS	2000	Pounds	3
LEAD COMPOUNDS	1999	Pounds	2
LEAD COMPOUNDS	1997	Pounds	350
LEAD COMPOUNDS	1996	Pounds	440
LEAD COMPOUNDS	1995	Pounds	9900
LEAD COMPOUNDS	1993	Pounds	2
LEAD COMPOUNDS	1992	Pounds	3
LEAD COMPOUNDS	1991	Pounds	1
SULFURIC ACID (1994 AND AFTER "ACID AEROSOLS" ONLY)	1994	Pounds	650
SULFURIC ACID (1994 AND AFTER "ACID AEROSOLS" ONLY)	1993	Pounds	2400

Additional links for TRI:

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- National Library of Medicine (NLM)  TOXMAP
- The Environmental Defense Fund's (EDF) Chemical Scorecard has on-line environmental information regarding this  facility's reported TRI releases.



Water Discharge Permits (PCS)

You are here: [EPA Home](#) » [Envirofacts PCS](#)

Last updated on Wednesday, June 17th, 2009.



PCS

Detailed Reports

Report
an
Error

Results are based on data extracted on JUN-09-2009

Pending migration to a new system, the data for the Permit Compliance System (PCS) will remain frozen in Envirofacts for the following states and territories as of the below listed dates:

Frozen as of June 6th, 2006: MA,NH,RI,VI,PR,DC,MD,IN,NM,UT,HI,AK,ID

Frozen as of August, 2006:

AS,AT,CT,CZ,FM,GA,GB,GU,JA,MH,MP,MT,MW,NE,NI,NN,NV,NY,PA,PW,SD,SR,TT,UM

Frozen as of April 24th, 2008: IL

Frozen as of August 26th, 2008: AR,CA,CO,OK,TN,WI

Please refer to the [ECHO Clean Water Act Query Screen](#) to retrieve updated data for the states frozen in Envirofacts.

Facility

<u>FACILITY NAME (1) :</u>	Douglas Battery Mfg Co	<u>NPDES :</u>	- NCG030081
<u>FACILITY NAME (2) :</u>			
<u>STREET 1 :</u>	500 Battery Dr	<u>SIC CODE :</u>	3691 = STORAGE BATTERIES
<u>CITY :</u>	WINSTON-SALEM PV	<u>MAJOR / MINOR :</u>	
<u>COUNTY NAME :</u>	FORSYTH	<u>TYPE OF OWNERSHIP :</u>	PRI = PRIVATE
<u>STATE :</u>	NC	<u>INDUSTRY CLASS :</u>	P
<u>ZIP CODE :</u>	27107	<u>ACTIVITY STATUS :</u>	A = Active
<u>REGION :</u>	04	<u>INACTIVE DATE :</u>	
<u>LATITUDE :</u>	+3603350		
<u>LONGITUDE :</u>	-08013460	<u>TYPE OF PERMIT ISSUED :</u>	S = STATE
<u>LAT/LON CODE OF ACCURACY :</u>	1 = NEAREST 10TH OF A SECOND	<u>PERMIT ISSUED DATE :</u>	01-NOV-2007
<u>LAT/LON METHOD :</u>	A = MAP INTERPOLATION	<u>PERMIT EXPIRED DATE :</u>	31-OCT-2012
<u>LAT/LON SCALE :</u>		<u>ORIGINAL PERMIT ISSUE DATE :</u>	30-APR-1993
<u>LAT/LON DATUM :</u>	1 = NAD27		
<u>LAT/LON DESCRIPTION :</u>	01099	<u>STREAM SEGMENT :</u>	
<u>USGS HYDRO BASIN CODE :</u>		<u>MILEAGE IND :</u>	
<u>FLOW :</u>	0	<u>FEDERAL GRANT IND :</u>	
<u>RECEIVING STREAM CLASS CODE :</u>			

RECEIVING WATERS :	Salem Creek (Middle Fork Muddy Cree	FINAL LIMITS IND :	F = FINAL
PRETREATMENT CODE :			
SLUDGE INDICATOR :		SLUDGE CLASS FAC IND :	
SLUDGE RELATED PERMIT NUM :		ANNUAL DRY SLUDGE PROD :	
MAILING NAME :	Douglas Battery Mfg Co		
MAILING STREET (1) :	500 Battery Dr	MAILING STREET (2) :	
MAILING CITY :	Winston Salem	MAILING STATE :	NC
MAILING ZIP CODE :	27107		
SLUDGE COMMERCIAL HANDLER :			
SLUDGE HANDLER STREET (1) :		SLUDGE HANDLER STREET (2) :	
SLUDGE HANDLER CITY :		SLUDGE HANDLER STATE :	
SLUDGE HANDLER ZIP CODE :			
COGNIZANT OFFICIAL :	A Csontos	COGNIZANT OFFICIAL TEL :	336-650-7217

Permit Documents

FACILITY NAME (1) : Douglas Battery Mfg Co **NPDES :** NCG030081
FACILITY NAME (2) :

No Permit Documents Found.

Permit Tracking

FACILITY NAME (1) :	Douglas Battery Mfg Co	NPDES :	NCG030081
FACILITY NAME (2) :		PERMIT ISSUED BY :	S = STATE
PERMIT ISSUED DATE :	01-NOV-2007	ORIGINAL DATE OF ISSUE :	30-APR-1993
PERMIT EXPIRED DATE :	31-OCT-2012		

Permit Tracking Events:

EVENT CODE	EVENT DESCRIPTION	ACTUAL DATE
P5099	PERMIT EXPIRED	31-OCT-2012
P4099	PERMIT ISSUED	01-NOV-2007

P1099	APPLICATION RECEIVED	02-APR-2007
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Inspections

FACILITY NAME (1) : Douglas Battery Mfg Co **NPDES** : NCG030081

FACILITY NAME (2) :

<u>INSPECTION TYPE</u>	<u>DATE OF INSPECTION</u>	<u>INSPECTION PERFORMED BY</u>
W = STORMWATER	14-MAY-2004	S = STATE

Outfalls/Pipe Schedules

FACILITY NAME (1) : Douglas Battery Mfg Co **NPDES** : NCG030081

FACILITY NAME (2) :

No PCS Pipe Schedule Information Found.

Measurements and Violations

FACILITY NAME (1) : Douglas Battery Mfg Co **NPDES** : NCG030081

FACILITY NAME (2) :

No PCS Measurements and Violations Information Found.

Enforcement Actions

FACILITY NAME (1) : Douglas Battery Mfg Co **NPDES** : NCG030081

FACILITY NAME (2) :

No PCS Enforcement Actions Found.

Evidentiary Hearings

FACILITY NAME (1) : Douglas Battery Mfg Co **NPDES** : NCG030081

FACILITY NAME (2) :

No PCS Evidentiary Hearing Information Found.

Pretreatment Inspections/Audits

FACILITY NAME (1) : Douglas Battery Mfg Co **NPDES** : NCG030081

FACILITY NAME (2) :

No PCS Pretreatment Inspections Found.



Facility Registry System (FRS)

[Home](#) • [EPA Home](#) • [Envirofacts](#) • [FRS](#) • [Help](#)



FRS

Facility Detail Report



DOUGLAS BATTERY
500 BATTERY DR.
WINSTON SALEM, NC 27107
EPA Registry Id: 110000345387



Legend

- Selected Facility
- EPA Facility of Interest
- State/Tribe Facility of Interest

The facility locations displayed come from the FRS Spatial Coordinates tables. They are the best representative locations for the displayed facilities based on the accuracy of the collection method and quality assurance checks performed against each location. The North American Datum of 1983 is used to display all coordinates.

Environmental Interests

Information System	Information System ID	Environmental Interest Type	Data Source	Last Updated Date	Supplemental Environmental Interests:
AIR FACILITY SYSTEM	3706700389	AIR SYNTHETIC MINOR ()	AIRS/AFS	03/25/2009	
NORTH CAROLINA - FACILITY IDENTIFICATION TEMPLATE FOR STATES	8252	STATE MASTER	NC-FITS		-115DA4YG00TXD64FBEMGD WASTEWATER FACILITY
NATIONAL EMISSIONS INVENTORY	NEINCT\$2796	CRITERIA AND HAZARDOUS AIR POLLUTANT INVENTORY	NEI		
PERMIT COMPLIANCE SYSTEM	NCG030081	NPDES NON-MAJOR	NPDES PERMIT	04/02/2007	
RESOURCE CONSERVATION AND RECOVERY ACT INFORMATION SYSTEM	NCD003213030	HAZARDOUS WASTE BIENNIAL REPORTER (ACTIVE)	RCRAINFO	12/31/2005	
RESOURCE CONSERVATION AND RECOVERY ACT INFORMATION SYSTEM	NCD003213030	LQG (ACTIVE)	NOTIFICATION (RCRA)	12/20/2007	

TOXIC RELEASE INVENTORY SYSTEM	27107DGLSB500BA	TRI REPORTER	TRI REPORTING FORM	06/26/2008
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Additional EPA Reports: [MyEnvironment](#) [Enforcement and Compliance](#) [Site Demographics](#) [Watershed Report](#)

Standard Industrial Classification Codes (SIC)

Data Source	SIC Code	Description	Primary
NEI	3691	STORAGE BATTERIES	
NC-FITS	3691	STORAGE BATTERIES	
TRIS	5013	MOTOR VEHICLE SUPPLIES AND NEW PARTS	
TRIS	3691	STORAGE BATTERIES	
PCS	3691	STORAGE BATTERIES	
AIRS/AFS	3691	STORAGE BATTERIES	

National Industry Classification System Codes (NAIC)

Data Source	NAICS Code	Description	Primary
RCRAINFO	335911	STORAGE BATTERY MANUFACTURING.	
NEI	335911	STORAGE BATTERY MANUFACTURING.	

Facility Mailing Addresses

Affiliation Type	Delivery Point	City Name	State	Postal Code	Inform Syst
PRIMARY MAILING ADDRESS	500 BATTERY DR	WINSTON SALEM	NC	27107	PC
FACILITY MAILING ADDRESS	P.O. BOX 12159	WINSTON SALEM	NC	27117	RCRA
OWNER	500 BATTERY DRIVE	WINSTON-SALEM	NC	27107	RCRA
FACILITY MAILING ADDRESS	500 BATTERY DR	WINSTON-SALEM	NC	27107	TRI

Facility Codes and Flags

EPA Region:	04
Duns Number:	003213030
Congressional District Number:	12
Legislative District Number:	
HUC Code/Watershed:	03040101 / UPPER YADKIN
US Mexico Border Indicator:	NO
Federal Facility:	
Tribal Land:	NO

Alternative Names

Alternative Name	Source of Data
DOUGLAS BATTERY MFG. CO.	TRI REPORTING FORM

Organizations

Affiliation Type	Name	DUNS Number	Information System	Mailing Address
OWNER	DOUGLAS BATTERY MFG. CO.		RCRAINFO	View
OPERATOR	DOUGLAS BATTERY MFG. CO.		RCRAINFO	

Contacts

Affiliation Type	Full Name	Office Phone	Information System	Mailing Address
COGNIZANT OFFICIAL	A CSONTOS	3366507217	PCS	
REGULATORY CONTACT	ALAN L CSONTOS	3366507217	RCRAINFO	
PERMITTING CONTACT			RCRAINFO	
PUBLIC CONTACT	G. WALKER DOUGLAS	3366507112	TRIS	

Query executed on: JUN-25-2009

Additional information for CERCLIS or TRI sites:

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- National Library of Medicine (NLM) [RESTART](#) [TOXMAP](#)

REFERENCE 9

Douglas Battery Manufacturing Company
This is a preliminary plan of action regarding incident 897964.

Proposed Action Plan

1) Basic time line of events

Thursday, February 19

2:00 pm Acid transfer started to top off tank in Ind tank farm. Contact plant management about release

3:10 pm Release discovered Douglas Battery Security contact on site emergency response commander. There are no injuries to personnel.

3:30 pm National Response Center notified Rept # 897964 Office J. Arsenault

3:36 pm NC Office of Emergency Mgt. notified called Web Shadden

3:41 pm Forsyth Co. Emergency Mgt. Office notified August Vernon

4:14 pm Courtesy call to Forsyth County Env. Affairs left voice mail for Robert Russ

No call to storm water people since there was no chance any release could occur to surface waters

During this time Douglas Response team neutralizes liquid flowing into the parking lot
Free liquid neutralized by 4:00 PM leave the soda ash down to continue absorbing.

Contact Custom Systems about equipment for excavation for delivery 2/20 am.

5:45 - 6:20 pm NC DEHNER Inactive Hazardous Sites Branch Ernest Lawrence arrives to observe the incident site.

Acid in parking lot neutralized.

Concern about possible release to storm water system.

Friday, February 20

Douglas response team evaluates situation and gathers equipment needed for exploration of transfer pipe line.

Call from NC DEHNER Inactive Hazardous Sites Branch, Bonnie Ware, Asks about quantity of acid released. Size of the transfer line. 2' transfer line in 3" containment line to building where the containment line increases in size. At this time we do not believe there are any potable water wells in this area. Additional inquiries will be made prior to issuing a final report.

Afternoon Douglas Response Team begins exploration excavation in parking lot to find leak location.

2:30 PM EPA On Site Coordinator arrives to observe activities.

Saturday, February 21 (future)

9:00 AM Meet Ken Rhame to observe site activities.

Finish excavation line to Industrial Building, repair line, replace double wall pipe

Soil will be segregated for treatment determination.

Composite grab samples will be taken from the sides and bottom of the trench for analysis.

Monday, February 23

Send samples to internal lab for analysis pH and total Pb analysis. Test results will determine disposal disposition.

Monday / Wednesday Incident report compiled, completed, and distributed to appropriate agencies.

2) Proposed treatment of soil exposed to electrolyte. Mix soil and soda ash for until neutral pH range 6-9.

3) If pb present in soil > 100 ppm (presume equivalent to 5 ppm TCLP) dispose of as hazardous waste.

4) Photographs of event site available in second email.

5) Currently the best guess of released electrolyte is 300 – 500 gallons at specific gravity of 1.230. This is approximately 32% acid in water. At this time it appears that the amount of sulfuric released to the environment will exceed the RQ for sulfuric acid.

Respectfully Submitted,

Cristine Studley
Environmental, Health and Safety Programs Manager
Douglas Battery Manufacturing

Requested electronic submission to:

Brent Burch, NC RCRA Western
Charlotte Jesnick, Inactive Hazardous Sites Branch
Bonnie Ware, Inactive Hazardous Sites Branch
Ernest Lawrence, Waste Management Specialist
Ken Rhame, On Site Coordinator, EPA
Bruce Parris
Al Csontos, Director, Environmental Engineering
Dan Pegram, Manufacturing
Chuck Burkhardt, VP of Operations
Walker Douglas, VP

REFERENCE 10

(b) Temperature: the Commission may establish a water quality standard for temperature for specific water bodies other than the standards specified in Rules .0211 and .0220 of this Section, upon a case-by-case determination that thermal discharges to these waters, that serve or may serve as a source or receptor of industrial cooling water provide for the maintenance of the designated best use throughout a reasonable portion of the water body. Such revisions of the temperature standard must be consistent with the provisions of Section 316(a) of the Federal Water Pollution Control Act as amended. A listing of existing thermal revisions shall be maintained and made available to the public by the Division.

History Note: Authority G.S. 143-214.1; 143-215.3(a)(1);
Eff. February 1, 1976;
Amended Eff. May 1, 2007; April 1, 2003; February 1, 1993; October 1, 1989; January 1, 1985; September 9, 1979.

15A NCAC 02B .0209 VARIANCES FROM APPLICABLE STANDARDS
15A NCAC 02B .0210 BEST USE CRITERIA

History Note: Authority G.S. 143-214.1;
Eff. February 1, 1976;
Amended Eff. September 9, 1979;
Repealed Eff. January 1, 1985

15A NCAC 02B .0211 FRESH SURFACE WATER QUALITY STANDARDS FOR CLASS C WATERS

General. The water quality standards for all fresh surface waters are the basic standards applicable to Class C waters. See Rule .0208 of this Section for standards for toxic substances and temperature. Additional and more stringent standards applicable to other specific freshwater classifications are specified in Rules .0212, .0214, .0215, .0216, .0217, .0218, .0219, .0223, .0224 and .0225 of this Section.

- (1) **Best Usage of Waters:** aquatic life propagation and maintenance of biological integrity (including fishing and fish), wildlife, secondary recreation, agriculture and any other usage except for primary recreation or as a source of water supply for drinking, culinary or food processing purposes;
- (2) **Conditions Related to Best Usage:** the waters shall be suitable for aquatic life propagation and maintenance of biological integrity, wildlife, secondary recreation, and agriculture. Sources of water pollution which preclude any of these uses on either a short-term or long-term basis shall be considered to be violating a water quality standard;
- (3) **Quality standards applicable to all fresh surface waters:**
 - (a) Chlorophyll a (corrected): not greater than 40 ug/l for lakes, reservoirs, and other waters subject to growths of macroscopic or microscopic vegetation not designated as trout waters, and not greater than 15 ug/l for lakes, reservoirs, and other waters subject to growths of macroscopic or microscopic vegetation designated as trout waters (not applicable to lakes or reservoirs less than 10 acres in surface area). The Commission or its designee may prohibit or limit any discharge of waste into surface waters if, in the opinion of the Director, the surface waters experience or the discharge would result in growths of microscopic or macroscopic vegetation such that the standards established pursuant to this Rule would be violated or the intended best usage of the waters would be impaired;
 - (b) Dissolved oxygen: not less than 6.0 mg/l for trout waters; for non-trout waters, not less than a daily average of 5.0 mg/l with a minimum instantaneous value of not less than 4.0 mg/l; swamp waters, lake coves or backwaters, and lake bottom waters may have lower values if caused by natural conditions;

- (i) Arsenic: 50 ug/l;
- (ii) Beryllium: 6.5 ug/l;
- (iii) Cadmium: 0.4 ug/l for trout waters and 2.0 ug/l for non-trout waters; attainment of these water quality standards in surface waters shall be based on measurement of total recoverable metals concentrations unless appropriate studies have been conducted to translate total recoverable metals to a toxic form. Studies used to determine the toxic form or translators must be designed according to the "Water Quality Standards Handbook Second Edition" published by the Environmental Protection Agency (EPA 823-B-94-005a) or "The Metals Translator: Guidance For Calculating a Total Recoverable Permit Limit From a Dissolved Criterion" published by the Environmental Protection Agency (EPA 823-B-96-007) which are hereby incorporated by reference including any subsequent amendments. The Director shall consider conformance to EPA guidance as well as the presence of environmental conditions that limit the applicability of translators in approving the use of metal translators;
- (iv) Chlorine, total residual: 17 ug/l;
- (v) Chromium, total recoverable: 50 ug/l;
- (vi) Cyanide, 5.0 ug/l, unless site-specific criteria are developed based upon the aquatic life at the site utilizing The Recalculation Procedure in Appendix B of Appendix L in the Environmental Protection Agency's Water Quality Standards Handbook hereby incorporated by reference including any subsequent amendments;
- (vii) Fluorides: 1.8 mg/l;
- (viii) Lead, total recoverable: 25 ug/l, collection of data on sources, transport and fate of lead shall be required as part of the toxicity reduction evaluation for dischargers who are out of compliance with whole effluent toxicity testing requirements and the concentration of lead in the effluent is concomitantly determined to exceed an instream level of 3.1 ug/l from the discharge;
- (ix) Mercury: 0.012 ug/l;
- (x) Nickel: 88 ug/l; attainment of these water quality standards in surface waters shall be based on measurement of total recoverable metals concentrations unless appropriate studies have been conducted to translate total recoverable metals to a toxic form. Studies used to determine the toxic form or translators must be designed according to the "Water Quality Standards Handbook Second Edition" published by the Environmental Protection Agency (EPA 823-B-94-005a) or "The Metals Translator: Guidance For Calculating a Total Recoverable Permit Limit From a Dissolved Criterion" published by the Environmental Protection Agency (EPA 823-B-96-007) which are hereby incorporated by reference including any subsequent amendments. The Director shall consider conformance to EPA guidance as well as the presence of environmental conditions that limit the applicability of translators in approving the use of metal translators;
- (xi) Pesticides:
 - (A) Aldrin: 0.002 ug/l;
 - (B) Chlordane: 0.004 ug/l;
 - (C) DDT: 0.001 ug/l;
 - (D) Demeton: 0.1 ug/l;
 - (E) Dieldrin: 0.002 ug/l;
 - (F) Endosulfan: 0.05 ug/l;
 - (G) Endrin: 0.002 ug/l;
 - (H) Guthion: 0.01 ug/l;
 - (I) Heptachlor: 0.004 ug/l;
 - (J) Lindane: 0.01 ug/l;
 - (K) Methoxychlor: 0.03 ug/l;
 - (L) Mirex: 0.001 ug/l;
 - (M) Parathion: 0.013 ug/l;
 - (N) Toxaphene: 0.0002 ug/l;
- (xii) Polychlorinated biphenyls: (total of all PCBs and congeners identified) 0.001 ug/l;
- (xiii) Selenium: 5 ug/l;
- (xiv) Toluene: 11 ug/l or 0.36 ug/l in trout waters;

REFERENCE 11

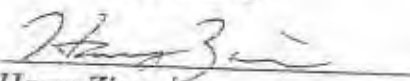
EXPANDED SITE INSPECTION

*Sherwood Treating Company
NCD 003 231 545
Winston-Salem, Forsyth County, North Carolina
Reference No. 0402677*

September 1999

*Superfund Section
Division of Waste Management
North Carolina Department of Environment
and Natural Resources*

Prepared by:


*Harry Zinn
Environmental Engineer II*

Reviewed by:

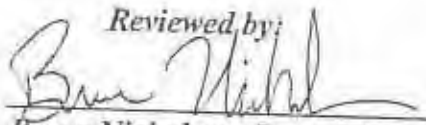

*Bruce Nicholson, Branch Head
Special Remediation Branch*

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- 2.0 Site Description
 - 2.1 Location
 - 2.2 Site Description and Regulatory History
 - 2.3 Operational History and Waste Characteristics
- 3.0 Waste/Source Sampling
 - 3.1 Sample Locations
 - 3.2 Analytical Results
 - 3.3 Conclusions
- 4.0 Groundwater Pathway
 - 4.1 Hydrogeology
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 - 4.4 Analytical Results
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 - 5.1 Hydrology
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- 7.0 Summary and Conclusions

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- 2 Site Map
- 3 Site Layout and Sampling Locations

EXECUTIVE SUMMARY

This expanded site inspection report describes the Sherwood Treating Company Site. The presently abandoned site was operated as a wood treating facility utilizing the Fluoro Chrome Arsenic Phenol (FCAP) and the Chromated Copper Arsenate (CCA) methods for over 36 years. Contamination from this operation in the form of chromium, copper and arsenic had been detected in the on-site ground water, on-site soils, and in the sediments of nearby Salem Creek.

In 1995, the U.S. Environmental Protection Agency Emergency Response and Removal Branch (ERRB) performed a removal of the soils contaminated with chromium and arsenic at this site. During this removal additional samples were collected by ERRB according to Contract Laboratory Program (CLP) protocol to characterize the surface water pathway. Due to qualified data, the surface water pathway was resampled by the North Carolina Superfund Section in November 1998. According to these samples, the surface water pathway has not been significantly impacted.

The North Carolina Superfund Section recommends that the site be given a No Further Remedial Action Planned (NFRAP) status under CERCLA.

1.0 INTRODUCTION

Under the authority of the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA), the Superfund Amendments and Reauthorization Act of 1986 (SARA), and cooperative agreement with the United States Environmental Protection Agency (EPA), Waste Management Division, Region IV, the North Carolina Superfund Section conducted an Expanded Site Inspection (ESI) at the Sherwood Treating Company site in Winston-Salem, Forsyth County, North Carolina. The purpose of the ESI was to obtain the data necessary to assess the threat posed by the site to human health and the environment and to complete a Hazard Ranking System (HRS) score for the site to determine the need for further action under CERCLA or other authority. This investigation included reviewing existing files and sample data, conducting sediment sampling under EPA Contract Laboratory Program (CLP) protocol (February 7, 1995) and collecting additional data needed to document HRS factors.

2.0 SITE DESCRIPTION

2.1 Location

The Sherwood Treating Company (STC) is located at 1660 Silas Creek Parkway in the city of Winston-Salem, Forsyth County, North Carolina. The site can be reached by taking I-40 west to Winston-Salem. From I-40, take the Silas Creek Parkway exit and proceed south on the Silas Creek Parkway for approximately 5 miles. The site is located on the south side of the parkway behind the China City Restaurant. The site is located on the Winston-Salem West USGS quadrangle map at Latitude North 36° 04' 1" and Longitude West 80° 15' 50" (Ref. 3).

2.2 Site Description and Regulatory History

The Sherwood Treating Company site occupies 5 acres and is bordered on the north and west by Salem Creek. The site is surrounded on the other two sides by commercial and light industrial areas (Fig. 2).

The ERRE conducted a removal action at the site in 1995. Prior to the Removal Action, the site consisted of the Pressure Vessel and Drip Pad area, an above ground steel work tank for Chromated Copper Arsenate (CCA) solution, a 500 gallon above ground CCA solution tank, three 9,000 gallon above ground storage tanks for Fluoro Chrome Arsenic Phenol (FCAP), a boiler building and an abandoned kiln (Fig. 2). During the Removal Action, approximately 10,000 gallons of dilute 2% CCA solution was detected in one of the sections of the work tank. Also, approximately 600 gallons of concentrated CCA solution was

collected out of the cement vat surrounding the work tank. The concentrated CCA solution was sent to Envotech Management Services in Belleville, Michigan, and the 2 % CCA solution was sent to H&M Treating Company in Rockwell, NC for recycling (Ref.14, pp.11,14). The only other source on-site is the soil which has been contaminated from site activities over the years.

After the 1995 ERRB removal action, the site has been totally cleared of all structures and equipment (Ref.14, pp.10). Also, approximately 21,969 tons of soils that were contaminated above the clean-up criteria of Arsenic-100ppm and Chromium-400 ppm were removed (Ref.14, pp.14).

STC was issued a RCRA generator permit by the North Carolina Division of Health Services (NCD 003 231 545) in 1980 and was changed to a small quantity generator in 1982 (Ref. 6).

2.3 Operational History and Waste Characteristics

Prior to 1953, the site was pristine farmland. By 1955 an active wood treating facility was located on-site. The Fluoro Chrome Arsenic Phenol (FCAP) process was used at this facility until the early 1970's. Since then the Chromated Copper Arsenate (CCA) process was used until the site stopped operating in 1989 (Ref. 5, pp.1).

When the facility was in operation, wood products were loaded into a treatment cylinder. A treatment solution (FCAP or CCA) was added and the cylinder was pressurized to force the solution into the wood. Then the cylinder was put under a vacuum to extract the excess solution out of the wood. The remaining solution was recycled back into the work tank. Wood which had been treated was staged on the drip pad for 24 to 48 hours after which it was stored on various areas of the site. The wood products would finally be dried in the kiln building and staged on-site until shipping (Ref 5, pp.1,2).

During operations, the only waste generated was from the cleaning of tank residues, however, widespread soil contamination occurred from the treatment solution that continued to drip from the wood products as they were staged at various parts of the site.

3.0 WASTE/SOURCE SAMPLING

3.1 Sample Locations

Because this site has undergone a removal action, there has been a significant amount of sampling and source delineation performed (Ref. 14).

During the removal action, approximately 10,000 gallons of dilute 2% CCA solution was detected in one of the sections of the work tank. Also, approximately 600 gallons of concentrated CCA solution was collected out of the cement vat surrounding the work tank. The only other source on-site was the soil which had been contaminated from site activities over the years. These soils were removed to clean up goals of 100 ppm arsenic and 400 ppm chromium. In addition to the liquid wastes a total of 21,969 tons of soil were removed from the site (Ref. 14).

3.2 Analytical Results

Some of the sample results from the Removal Action are available in the Final Report (Ref. 14).

3.3 Conclusions

The Removal Action performed by the EPA ERRB was completed in February of 1995. Confirmatory samples were taken to insure all contaminated soils above the clean up goals were removed.

4.0 GROUNDWATER PATHWAY

4.1 Hydrogeology

During the Site Investigation sampling effort by Greenhorne and O'Mara, Inc. (G&O) on December 4, 1990, the ground water on-site was sampled from via temporary monitoring wells from two areas; the storage tank area (SWTGW02) and the drip pad area (SWTGW03). At SWTGW02 a boring was hand augured to a depth of approximately 9 feet below land surface (bls). A well screen and well casing were installed and the sample was collected via a bailer, without purging the well. At SWTGW03 a boring was hand augured to a depth of 10 feet (groundwater was encountered at 7 feet bls) and the sample was collected in a similar manner. These samples which were almost certainly very turbid, were compared to a background sample collected from a private well at the Bill Lakey residence approximately 800 feet south of the site. The analysis of the on-site samples (Ref. 7, appdx. 1, table 1) indicate the groundwater has been contaminated with every inorganic compound analyzed for, except copper which was also detected in the background sample. The probable turbidity problem caused by the procedures used to collect these samples would make the metals contamination of these samples highly suspect.

During this same sampling effort, a well was found at the Lakey residence. This is the only well mentioned in the Phase II Screening Site Investigation dated February 1991 by Greenhorne &

O'Mara, Inc (Ref. 7). No mention was made if this well was being used for potable water.

According to a map copied from the Winston-Salem/Forsyth County, City-County Utility Commission on March, 1993, the entire 4 mile Target Distance Limit (TDL) around the site is served by the municipal system (Ref. 8). Therefore, with no known contaminated potable wells, and very few if any people using groundwater as a potable water source, the groundwater pathway is not a pathway of much concern.

5.0 SURFACE WATER PATHWAY

5.1 Hydrology

The site area drains to the northeast, eventually into Salem Creek, located approximately 100 feet northeast of the site (Ref. 3, Figure 3). The area draining across the site is 12.8 acres (Ref. 9). The point where the northwest corner of the site drains into Salem Creek is considered the upper most Probable Point of Entry (PPE). The entire length of the site is also considered as PPE's since drainage to Salem Creek occurs along this area.

Salem Creek flows southwest for approximately 6.75 miles to its confluence with Muddy Creek. Muddy Creek flows for an additional 5.25 miles before it enters the Yadkin River. The surface water pathway ends 3 miles downstream in the Yadkin River.

5.2 Targets

No surface water intakes for potable water supplies or irrigation purposes are located within the 15-mile downstream area of concern. The first parcel of wetlands encountered is approximately 5 miles downstream from the PPE on Salem Creek and has a frontage of 0.19 miles. The second parcel on Salem Creek begins 0.5 miles further downstream and has a frontage of 0.3 miles. Two additional parcels of wetlands are located on Muddy Creek. The first is 9 miles downstream from the PPE and has a frontage of 0.09 miles while the second is 0.6 miles further downstream and has a frontage of 0.38 miles (Ref. 11). No other sensitive environments are located along the surface water pathway (Ref. 12).

5.3 Sample Locations

During the ERRB sampling event on February 7, 1995, 3 surface soil, 3 surface water, and 3 sediment samples were collected to better characterize the site. These samples were collected and analyzed according to Contract Laboratory Protocol

(CLP).

The downstream samples ST-003-SW and ST-003-SD were collected 30 feet upstream from a large concrete box culvert which discharges into Salem Creek from the west side. This spot was located 54 feet west and 40 feet south of an ERRB stake marked N7. ST-003-SD was collected from the surface at the water's edge on a depositional sand bank.

The release samples ST-002-SW and ST-002-SD were collected at the confluence of a drainage ditch from the site and Salem Creek. Sample ST-002-SD was collected from the bank at the water's edge on Salem Creek.

The background samples ST-001-SW and ST-001-SD were collected from just north of the northwest corner of the property in Salem Creek. ST-001-SD was collected from the surface of a depositional sandbar in the middle of Salem Creek (Ref. 13).

Since the "J" qualified data for mercury in Sediment Sample ST-003-SD could not conclusively refute contamination in the surface water pathway, additional samples were collected on November 23, 1998. The sampling plan for this event called for five sediment and six soil samples collected for inorganic analysis. Due to changes in conditions at the site only four sediment, two surface soil, and three soil boring sample locations were used.

STC-005-SD was not collected since no wetlands could be established along Salem Creek in the vicinity of the site. STC-004-SD, a release surface soil sample, was located 150 feet west of the second powerline tower on the property. STC-003-SD, a release sample, was located approximately half way between the powerline towers on the site. STC-002-SD, a background sample, was collected from just upstream of the corner of the parking lot behind China Garden and STC-001-SD, a background sample, was located upstream of the bridge carrying Silas Creek Parkway over Salem Creek. All of the samples were collected from the surface on the south bank of Salem Creek at the waterline. The two surface soil samples ST-001-SL, St-101-SL (duplicate of ST-001-SL), and ST-002-SL were collected to determine if a release from the site to the surface water pathway is occurring.

The soil borings were collected to determine if residual soil contamination was a potential continuing source for groundwater contamination. These samples were collected from approximately 3 foot depth to be below fill materials in these areas.

Results of Sample Analysis
 Sherwood treating Company 11/23/98

	ST-001-SD	ST-002-SD	ST-003-SD	ST-004-SD
Arsenic	2U	4.7	4.1	6.1
Chromium	15	33	30	37
Cooper *	13J	45J	42J	61J
Mercury	.07U	.2U	.08U	.2U

	ST-001-SL	ST-101-SL	ST-002-SL	ST-004-SL	ST-005-SL	ST-006-SL
Arsenic	2U	2U	6.8	7.1	3U	2U
Chromium	21	20	32	37	32	24
Cooper *	9.1J	8.8J	30J	7.8J	13J	9.4J
Mercury	.05U	.06U	.1U	.06U	.06U	.06U

* Cooper data J Qualified Blind Spike Recovery > warning limit

Result of Sample Analysis
Sherwood Treating Company 2/7/95

INORGANICS DATA

Contaminant	001-SS mg/kg	002-SS mg/kg	003-SS mg/kg	001-SD mg/kg	002-SD mg/kg	003-SD mg/kg	001-SW ug/l	002-SW ug/l	003-SW ug/l
Copper	30U	0.97	0.25	0.13	0.12	8U	7U	6U	3U
Mercury	0.14UR	0.23J	0.23J	0.12UR	0.13UR	0.17J	0.2UR	0.2UR	0.2UR

Qualifiers

Mercury all positive samples are J because Blank Spike Recovery=0%
Mercury all negative samples are R because Blank Spike Recovery=0%
only shaded samples indicate an observed release

ORGANICS DATA

Contaminant	001-SS mg/kg	002-SS mg/kg	003-SS mg/kg	001-SD mg/kg	002-SD mg/kg	003-SD mg/kg	001-SW ug/l	002-SW ug/l	003-SW ug/l
Phenanthrene	430U	93J	740	460U	86J	210J	10U	10U	10U
Anthracene	430U	450U	170J	460U	460U	460U	10U	10U	10U
Fluoranthene	62J	450U	1900	150J	190J	320J	10U	10U	10U
Pyrene	62J	170J	2000	140J	190J	300J	10U	10U	10U
Benzo(a)anthracene	430U	450U	1400	460U	460U	460U	10U	10U	10U
Chrysene	46J	130J	1200	94J	130J	160J	10U	10U	10U
Benzo(b/k)fluoranthene	85J	230J	2400	170J	200J	240J	10U	10U	10U
Benzo(a)pyrene	430U	110J	1300	76J	90J	120J	10U	10U	10U
Indeno(1,2,3,CD)pyrene	430U	450U	640J	460U	460U	460U	10U	10U	10U
Dibenzo(ah)anthracene	430U	450U	130J	460U	460U	460U	10U	10U	10U
Benzo(ghi)perylene	430U	450U	420J	460U	460U	460U	10U	10U	10U

Qualifiers

All U samples are undetected
All J samples are < quantitation limits

4 Analytical Results

During the February 7, 1995 sampling event no volatile or semi-volatile organic compounds were detected in any of the samples above the Sample Quantitation Limits (SQL's). No inorganic compounds were detected in any of the surface water samples. The non-detect samples for mercury were qualified as UR and the detect samples were qualified as J (bias low) because the Blank Spike Recovery=0%. The sampling event on November 23, 1998 was performed to ensure that no significant contamination has impacted the surface water pathway. Inorganics were the only compounds analyzed. No significant contaminants were detected in the sediments of Salem Creek (Ref. 18).

5 Conclusions

The analysis of the samples collected during the removal action in 1995 indicate the only contaminant that may possibly have been released from the site to the surface water pathway was mercury. Additional samples collected on November 23, 1998 indicate no mercury contamination. Therefore, the surface water pathway is not considered significant.

6 SOIL EXPOSURE and AIR PATHWAY

During the ERRB Removal Action of 1995, all contaminated soils above remedial goals were removed from the site. The soils left on-site have been backfilled with clean fill during the removal action (Ref.14).

The soil exposure and air pathways have not been pathways of concern in prior investigations or for this one due to no documented releases and/or a lack of receptors.

7 SUMMARY and CONCLUSIONS

Since no pathways are significantly threaten human health or the environment, the North Carolina Superfund Section is recommending that this site receives a status of No Further Remedial Action Planned under RCRA/SARA (NFRAP).

REFERENCES

1. U.S. Environmental Protection Agency, 1990. Hazard Ranking System; Final Rule. 55FR51532, December 14, 1990.
2. U.S. Environmental Protection Agency, 1991. Superfund Chemical Data Matrix (SCDM). Office of Solid Waste and Emergency Response. Directive 9345.1-13. Issued June 1996
3. Latitude and Longitude Calculation Worksheet #2 and Topographic Map Sheet.
4. Property Ownership History, North Carolina Superfund Sites, Project No. 55035 by Greenhorne & O'Mara, Inc. dated October, 1990
5. Field Log of Greenhorne & O'Mara for Phase I SSI Site Visit on 10/02/90.
6. Memorandum Steve Phibbs NC Division of Health Services to O. W. Strickland Solid and Hazardous Waste Management Branch. Interim Status Inspection July 2, 1982.
7. Greenhorne & O'Mara, Inc. February, 1991 Phase II Screening Site Investigation for the Sherwood Treating Company, Inc. NCD 003231545
8. Winston-Salem Water Supply Report 1987 Water Lines Map Updated on March 1993 by Harry Zinn
9. Memo to File, from Harry Zinn RE: Drainage area for Sherwood Treating Company 11/14/96.
10. State of North Carolina Department of Environment, Health, and Natural Resources. Classifications and Water Quality Standards Assigned to the Waters of the Yadkin-Pee Dee River Basin. March 1990.
11. Memo to File, from Harry Zinn RE: Surface Water Pathway for Sherwood Treating Company 4/27/99.
12. Memo to File, from Harry Zinn RE: Natural Heritage Program Visit April 20, 1993.
13. Field Log of North Carolina Superfund Section ESI Sampling February 7, 1995.
14. Melissa Folk Superfund Technical Assessment & Response Team to Charles Eger EPA Region IV, Sherwood Treating Site Formal Report TDD #04-9506-0011 02/21/96.
15. Letter from Harry Zinn NCDEHNR, to Cindy Gurley EPA Region IV RE: Sampling Plan for Sherwood Treating Company Site 10/3/94.

16. Phone Memorandum from Helene Kasser G&O to Joe Mickey NCDEM RE: Stratford Metal Finishing, Inc. (fishery) 05/29/90
17. Memorandum from Diane Guthrie EPA Region IV SEDS to Giezelle Bennett EPA Region IV RE: Results of Metals Inorganic Sample Analysis 99-0078 February 09, 1999.
18. Memo to File from Pat DeRosa RE: Stratford Metal Finishing, Inc. (resource use) June 30, 1988
19. Memo to Superfund Section Staff from Jeanette Stanley RE: Update of Wellhead Protection Programs in N.C. April 23, 1999



All areas on south have
water except:

Fraternity Church Rd
Ebert Rd
Small portion of W. Clemmonsville

W-S does serve below dotted line

WINSTON-SALEM/FORSYTH COUNTY, N.C.
CITY-COUNTY UTILITY COMMISSION

WATER SUPPLY REPORT
1987

EXHIBIT NO.

EXISTING FEEDER MAIN SYSTEM

Orange lines were
updated at County
Engr. Dept on 3/93 HJ3

MEMO

DATE: 04/27/99

TO: File

FROM: Harry Zinn, Environmental Engineer *HZ*
North Carolina DENR, Superfund Section

RE: Surface Water Pathway for Sherwood Treating Company

On 04/27/99 I delineated the surface water pathway for the Sherwood Treating site from the draft National Wetlands Inventory maps, Winston-Salem West, NC dated 3-26-93 and Welcome, NC dated 9-24-93. The Probable Point of Entry (PPE) from the site is into Salem Creek, approximately 100 feet north of the site. Salem Creek travels 6.75 miles in a southwesterly direction before entering Muddy Creek. Muddy Creek travels south southwest for 5.25 miles before entering the Yadkin River, which proceeds 3 miles south to complete the surface water pathway.

The first qualified wetland parcel along the surface water pathway occurs 5 miles downstream from the PPE on Salem Creek and has a frontage of 0.19 miles. A second parcel of wetlands on Salem Creek is 0.5 miles further downstream and has a frontage of 0.3 miles. Two additional parcels of wetlands are located on Muddy Creek. The first is 9 miles downstream of the PPE and has 0.9 miles of frontage while the second is located 0.6 miles downstream of that and has a frontage of 0.38 miles.

Flowrates for Salem Creek, Muddy Creek and the Yadkin River were determined by applying the formula found in "Low-Flow Characteristics of Streams in North Carolina" by G.L. Giese and Robert R. Mason Jr.. The Flowrate = Mean Annual Runoff x Drainage Area. The Mean Annual Runoff for the site is 1.0 according to the above mentioned reference. The Drainage Areas for the streams were taken from the "Drainage Areas of Selected Sites on Streams in North Carolina" USGS Open-File Report 83-211. The drainage areas are as follows:

Salem Creek	70.6 sq. mi.
Muddy Creek	186 sq. mi.
Yadkin River	2227 sq. mi.

Therefore,

Salem Creek	71 cfs
Muddy Creek	186 cfs
Yadkin River	2227 cfs

Ref. 38

MEMO

DATE: April 20, 1993
TO: File
FROM: Harry Zinn, Environmental Engineer *HZ*
North Carolina DEHNR, Superfund Section
RE: Natural Heritage Program Visit
Sherwood Treating Company
NCD 003 231 545

On April 20, 1993 I went to the Natural Heritage program office to investigate the possible location(s) of threatened or endangered species in the vicinity of the site. The Merope tuber (Earwigfly) is listed by the state as a Special Concern. It is located at Lat N 36° 01' 33", Long W 80° 14' 47", approximately 2.85 miles from the site. The Carex buxbaumii (Brown Bog Sedge) is listed by the state as a candidate for the endangered species list. It is located at Lat N 36° 07' 20", Long W 80° 16' 50", approximately 3.9 miles from the site.

REFERENCE 12

CERCLA

**PHASE II
SCREENING SITE INVESTIGATION
FOR THE
SHERWOOD TREATING COMPANY, INC
CHARLOTTE, NORTH CAROLINA
MCD 003231545**

Submitted to:

**State of North Carolina
Department of Environment, Health,
and Natural Resources
Division of Solid Waste Management
Superfund Section
Raleigh, North Carolina**

Prepared by:

**Greenhorne & O'Mara, Inc.
9001 Edmonston Road
Greenbelt, Maryland 20770**

February, 1991

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APPENDICES

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2.0 ENVIRONMENTAL SETTING

2.1 Topography

The topography of the site is virtually flat with no significant topographic relief. Salem Creek is located less than 100 feet northeast of the site. The site is at an average elevation of 730 feet above sea level. The average slope of the terrain between the facility and the unnamed tributary is less than 3 percent (Ref. 6).

2.2 Surface Water

Surface water runoff generally flows northeast towards Salem Creek, located approximately 100 feet northeast of the site (Ref. 6). Salem Creek flows southwest to its confluence with Muddy Creek approximately 6.8 miles downstream. Muddy Creek enters the Yadkin River approximately 13.2 miles downstream of the site (Ref. 6). All of these rivers are classified as "Class C" rivers, which are rivers suitable for fish and wildlife propagation, secondary recreation, and other uses requiring waters of lower quality (Ref. 28). There are no surface water intakes for public water supplies or for irrigation of food crops within 15 downstream miles of Sherwood Treating site. The nearest water supply intake is located on the Yadkin River. The intake is on the portion of the river that is just south of Interstate 40, below the Idles Dam, which is upstream from the confluence of Muddy Creek and the Yadkin River (Ref. 21). This intake serves Davidson County (Ref. 17 & 21). Surface water within the vicinity of the site is used primarily for boating and fishing. These activities occur along Salem Creek (below the wastewater treatment plant), Muddy Creek, and the Yadkin River. The types of fish caught for human consumption include carp, suckers, catfish, and sunfish (Ref. 7).

2.3 Geology, Soils, Groundwater

2.3.1 Geology

The site is located near the western edge of the Piedmont Physiographic Province. In the Piedmont Province, a layer of loose material called saprolite underlies the land surface and ranges in thickness from a foot or

two near bedrock outcrops to more than 100 feet. The saprolite consists of unconsolidated granular material, including coarse sands, gravels, and clays, and is derived by the weathering of the underlying bedrock. The Piedmont bedrock consists of many different types of igneous and metamorphosed igneous and sedimentary rocks.

About 85% of Forsyth County is underlain by gneiss. Although metamorphism has been so great as to alter the rock almost completely from its original character, most of this unit apparently is of sedimentary origin. The bedding, where it is mapped, strikes generally northeastward, dipping southeastward at a moderate angle. Bedrock underlying the site is a biotite gneiss and schist unit, composed primarily of feldspar and garnet gneiss, interlayered with amphibolite mica schist (Ref. 8, 10, & 11).

2.3.2 Soils

Soils underlying the site are classified as Ch, or Chewacla loam, 0 to 2 percent slopes. The Chewacla loam is somewhat poorly drained soils found on floodplains. It occurs in long band along streams. Infiltration is moderate, and surface runoff is slow. This soil is subject to frequent flooding for very brief periods in winter. It is flooded occasionally for brief periods during the growing season. The seasonally high water table is within 1.5 feet of the land surface. The permeability associated with this soil is 0.6 to 2.0 inches/hr (Ref. 12).

2.3.3 Groundwater

In the North Carolina Piedmont Province, groundwater is found in the saprolite and the underlying bedrock, which behave as a single unconfined aquifer. Water in the saprolite is found in the pore spaces, whereas water in the gneiss unit occurs in joints, fractures, bedding planes and schistosity planes. In Forsyth County, dug wells, usually 20 to 60 feet deep, yield adequate domestic supplies. Deeper, bored wells in the gneiss unit provide moderate to moderately large supplies for municipal and industrial use at most places. The average yield of wells in gneiss is 20 gallons per minute (gpm) and the water ranges from soft to extremely hard. The iron content is very low. Recharge to the groundwater tends to be in the interstream areas as precipitation percolates downward to the water

table. The groundwater discharges into the perennial streams and lakes, and the lowest points on the water table are at these places.

Groundwater at the site is expected to be encountered within approximately 20 feet below land surface (BLS). It is not known whether Salem Creek acts as a groundwater recharge or discharge area at the site. The hydraulic conductivity of the saprolite is estimated to be 10^{-3} to 10^{-5} cm/sec. The site is located in the Charlotte and Milton Belt Region of the Piedmont Physiographic Province. The area is characterized by Devonian to Ordovician-aged intrusive rocks (399 to 479 million years) belonging to the Gabbro of Concord Plutonic Suite. Specific to the area is gabbro-diorite which is a massive medium to coarse-grained dark-colored rock composed of mostly pyroxene or hornblende and plagioclase feldspars (Ref. 8, 9, 10, & 21).

2.4 Climate and Meteorology

The mean annual precipitation in the Winston-Salem area is approximately 46 inches (Ref. 13). The mean annual lake evaporation is approximately 40 inches; therefore, the net annual precipitation is 6.0 inches (Ref. 13). The 1-year/24-hour rainfall in this area is approximately 3.0 to 3.5 inches, and the 2-year/24-hour rainfall is 4.0 inches (Ref. 14).

2.5 Land Use

The Sherwood Treating Company site is located in the City of Winston-Salem. Land use within the vicinity of the site is predominantly commercial and industrial. There are several eating establishments located in the area, the closest being approximately 100 feet west of the site. Other land uses in the vicinity of the site is agricultural or woodlands. Neither groundwater nor surface water is used for irrigation purposes (Ref. 13).

2.6 Population Distribution

The total population within a 4-mile radius of the site is approximately 37,643. The population within each radius is listed below.

<u>Radius</u>	<u>Radii Population</u>	<u>Cumulative Population</u>
1/4 mile	116	116
1/2 mile	349	465
1 mile	1,510	1,975
2 miles	5,926	7,901
3 miles	10,804	18,705
4 miles	18,938	37,643

The population within each of the distance rings was determined by calculating the area in each ring and multiplying this figure by the population per square mile for Forsyth County. Population figures were derived from the 1984 North Carolina Statistical Abstract (Ref. 16).

2.7 Water Supply

There are no municipal wells within a 4-mile radius of Sherwood Treating Company site, nor are there any surface water intakes for public water supply within 15 downstream miles of the site (Ref. 4 & 21). The nearest downstream water supply intake is located on Yadkin River, approximately 23 miles downstream of the site. This water supply intake serves the residents of the City of Winston-Salem, Kernersville, Walkerstown, Rural Hall, and Clemens (Ref. 21). The city's backup intake is on Salem Lake, greater than 4 miles upstream of the site (Appendix A, Figure 3; Ref. 21). Residents living outside of the city limits are served by private wells (Ref. 4). A house count from the USGS topographic maps indicates that there are 137 homes located outside of city limits, but within a 4-mile radius, that are served by private wells. The number of homes served by private wells were multiplied by 2.6, the population per household in Forsyth County. A breakdown of the population served by private wells in each of the distance rings is provided below.

<u>Radius</u>	<u># of Homes</u>	<u>Population</u>
1/2-mile	0	0
1 mile	0	0
2 miles	0	0
3 miles	7	27
4 miles	130	494

If an area is annexed by the city, the residents have the option of having city water lines extended to their streets (Ref. 4 & 21).

2.8 Critical and Sensitive Environments

There are no known critical habitats of Federally-listed endangered or threatened species within a 4-mile radius of the site or within 15 miles downstream of the site (Ref. 20). There are no known fresh water or coastal wetlands located within 1 mile of the Sherwood Treating Company site. Wetlands in the western part of North Carolina have not been delineated and mapped. Wetlands may be associated with Salem Creek, but are probably not greater than 5-acres in size (Ref. 6).

PHONE MEMORANDUM

CALL FROM: Helene Kasser
CALL TO: Joe Mickey, Fisheries Biologist
NC DEM, Forsyth County (919-366-2982)
DATE: May 29, 1990 10:30am
RE: Stratford Metal Finishing, Inc.

I asked Mr. Mickey whether there was any recreational use of Tar Branch (I told him I thought Tar Branch was too small to accommodate boating and fishing). Mr. Mickey doubted that there would be any wading or fishing in Tar Branch since the water level is very shallow. Mr. Mickey did confirm the fact that there is light fishing and boating along Salem Creek (below the wastewater treatment plant), Muddy Creek, and the Yadkin River. He said all of these streams have been impacted by point and non-point sources of pollution. The heaviest fishing is done in the spring and early summer. The types of fish caught include Carp, Sucker, Catfish, and Sunfish (people do catch these for consumption). Finally, I asked Mr. Mickey whether he knew the flow rates of each of these streams. He did not, but he suggested I call Steve Mauney with the NC Department of Environmental Management at (919) 761-2351.

Comments or Action:

Call Steve Mauney of DEM

June 29, 1988

TO: File

FROM: Pat DeRosa *PD*

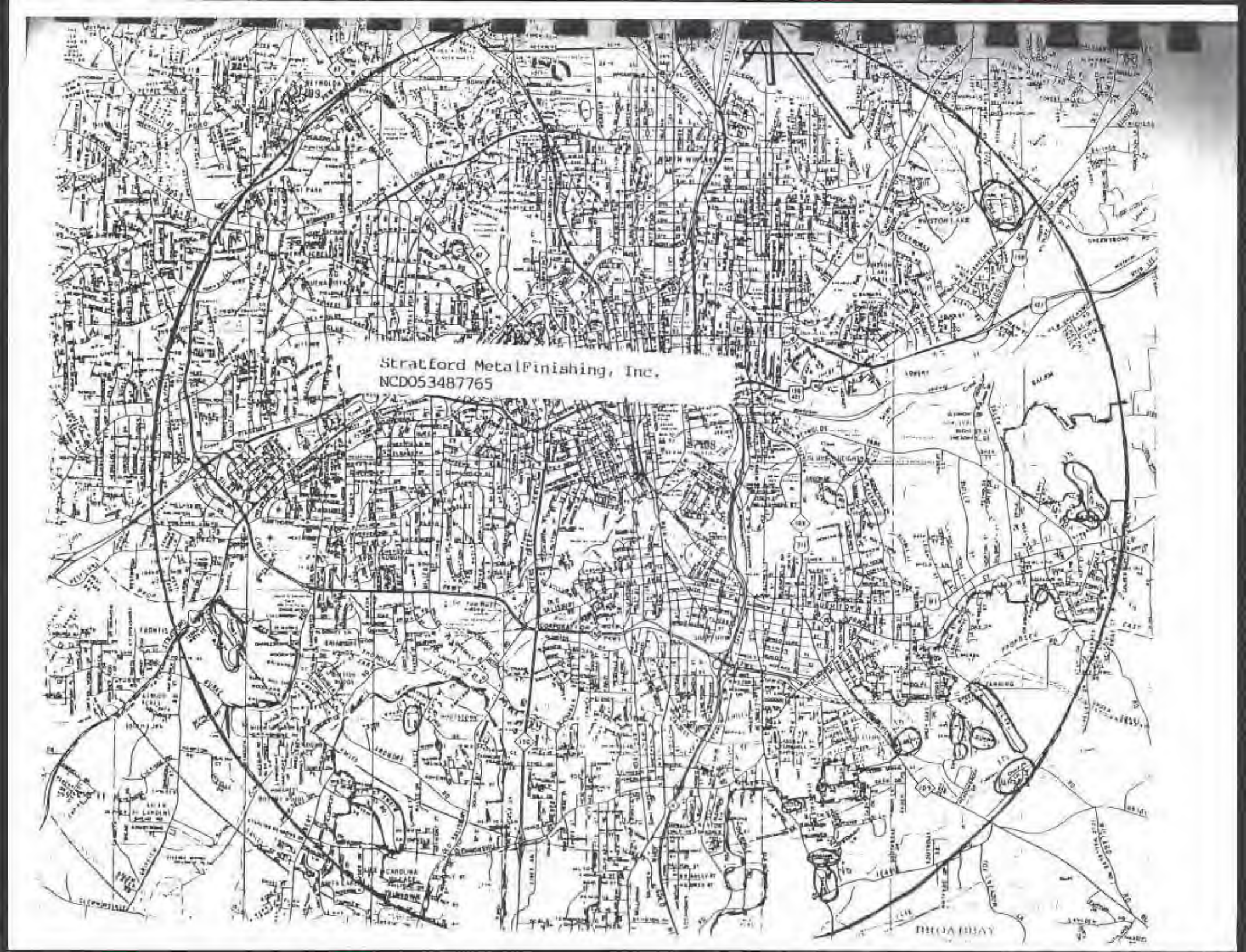
RE: Stratford Metal Finishing, Inc.
NCDO53487765

On June 27, 1988, I spoke by telephone with Kim Bodsford, Engineering Technician, Winston-Salem Public Water Supply (919) 27-8418 to verify information obtained during our initial visit on March 22, 1988. Mr. Bodsford said that once an area has been annexed by the city, the area has the option to have city water lines run to their street. He estimated that 95% of the homes within Winston-Salem city limits were using city water. City water is drawn from the Yadkin River downstream from Idles Dam. The 2nd intake is on Salem Lake. Kernersville purchases water from Winston-Salem, and Walkertown can draw from Winston-Salem as a backup. Distribution lines from these systems do not serve the 4-mile area around the subject site. I marked the city limit lines on the street maps of Winston-Salem and then had Mr. Bodsford identify those streets outside the city but within 4-miles, not served by city water. These streets were circled on the street map and transposed to the USGS topo map.

A house count from the USGS topo map indicates the following private well usage within 4 miles:

<u>RADIUS</u>	<u># HOMES</u>	<u>POPULATION</u>
1 mile	0	0
2 miles	0	0
3 miles	7	27
4 miles	130	494

PD/pb/pc.pat.56

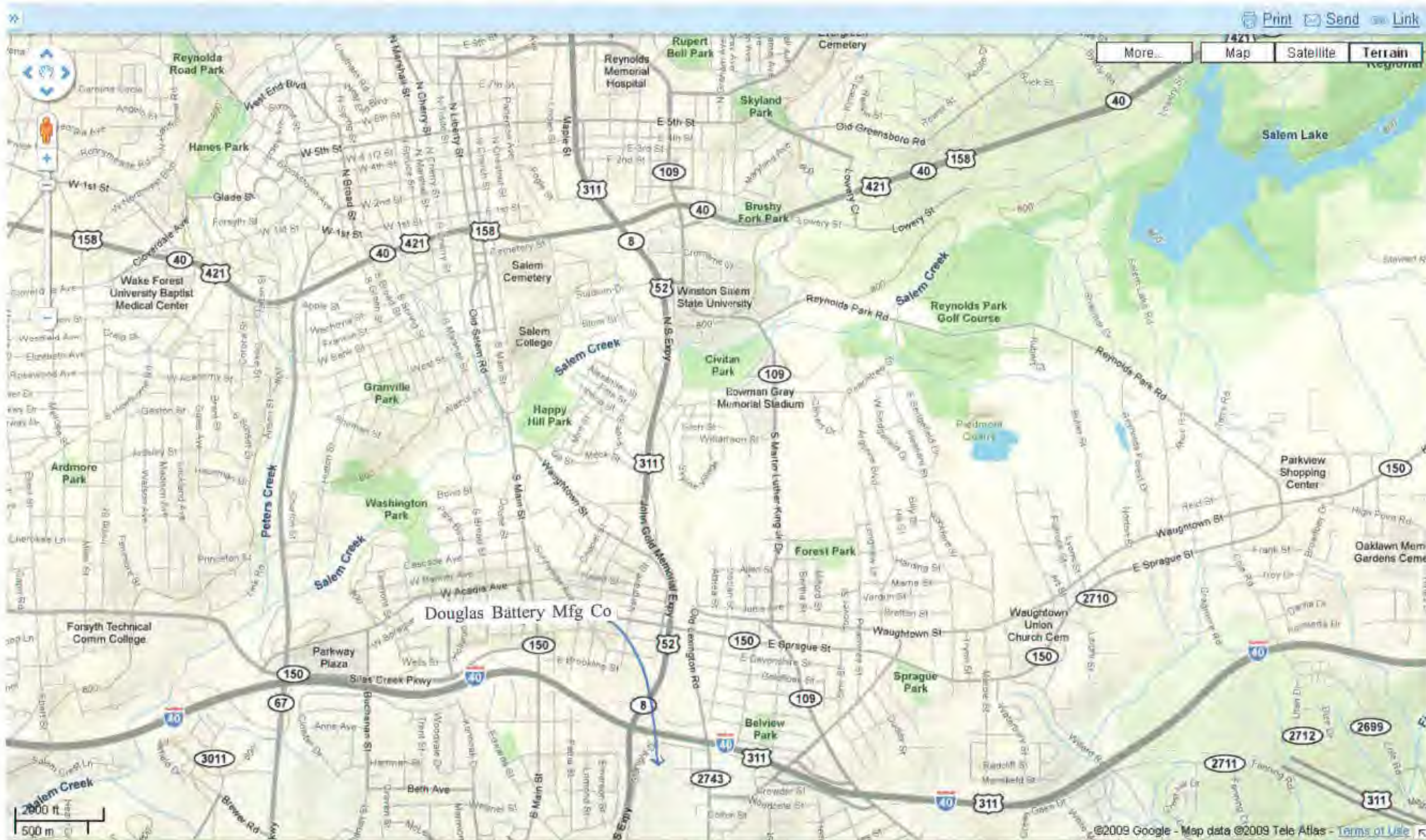


Stratford Metal Finishing, Inc.
NCD053487765



REFERENCE 13

Google maps

 [Show search options](#)Find businesses, addresses and places of interest. [Learn more](#)

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Google maps

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Search Maps

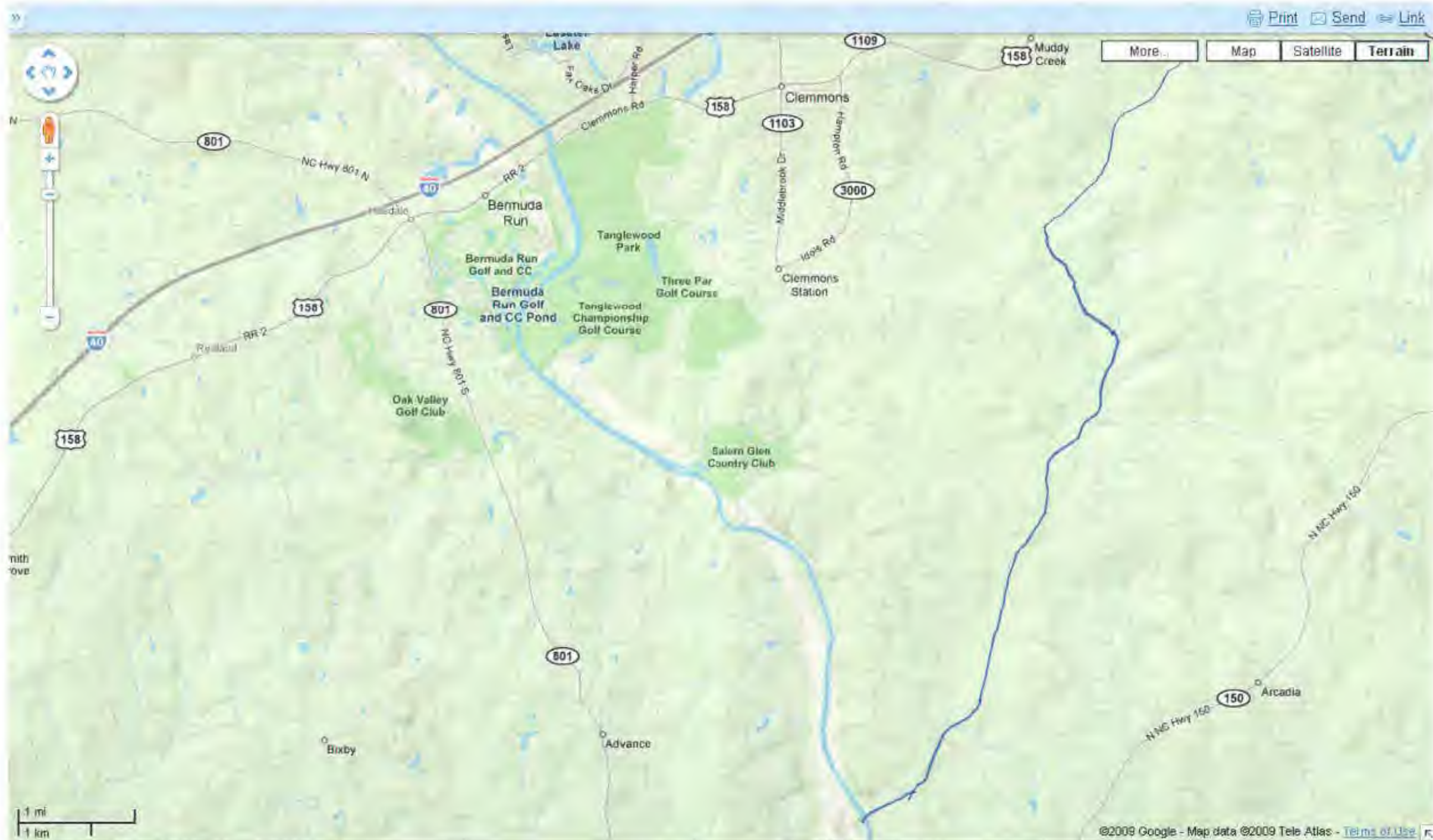
Show search options



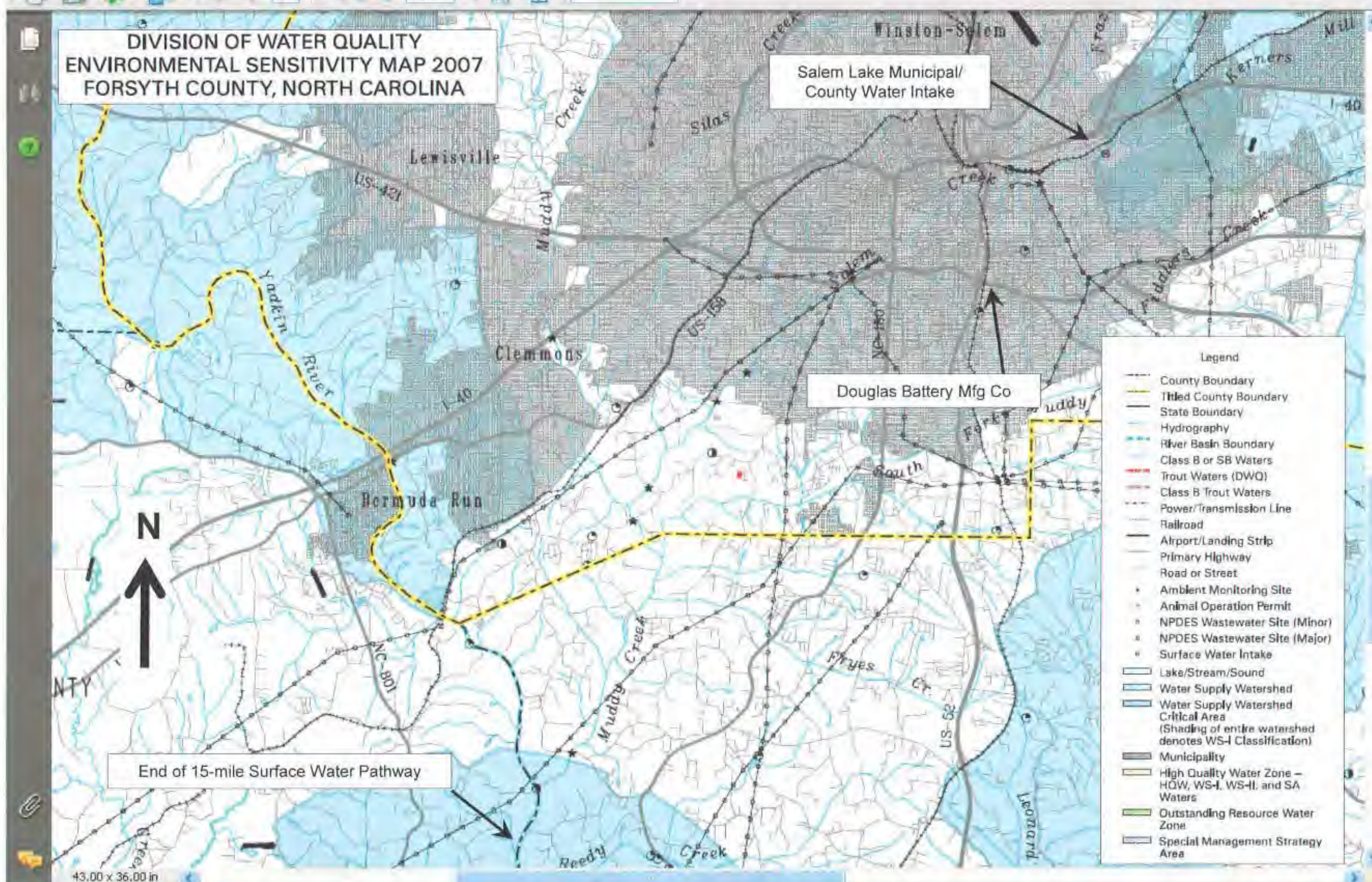
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REFERENCE 14



REFERENCE 15



U.S. Fish & Wildlife Service

Wetlands Online Mapper

About Home Layers Legend Key Map Locate

Contact Us Print PDF Help Exit

Advanced tools



Map Legend

Settings

- Interstate
- Major Roads
- Other Road
- Interstate
- State highway
- US highway
- Cities
- USGS Quad index 24K
- Lower 48 Available Wetland Data
- Non-Digital
- Digital
- No Data
- Scan
- NHD Waterbodies
- LAKE/POND
- RESERVOIR
- STREAM/RIVER
- NHD Streams
- Counties 100K
- Urban Areas 300K
- States 100K
- South America
- North America

Scale: 1:100,000 Map Tool: Pan Active Layer: Digital Wetland Polygons (Vector)

Done

Powered by: Geocortex

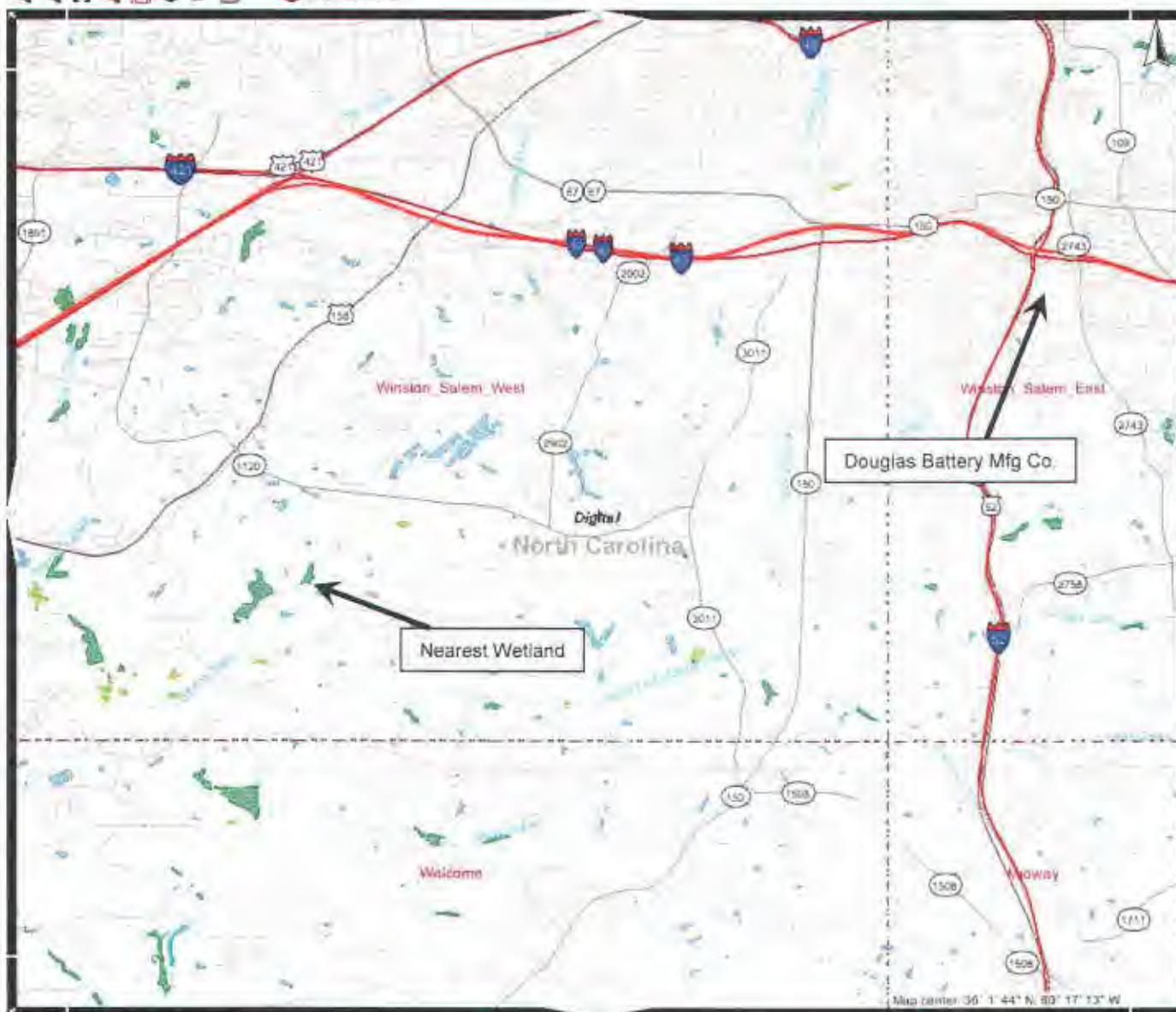
start

National Wetlands

National Wetlands

http://wetlandsfws...

10:58 AM



Map Legend

Settings

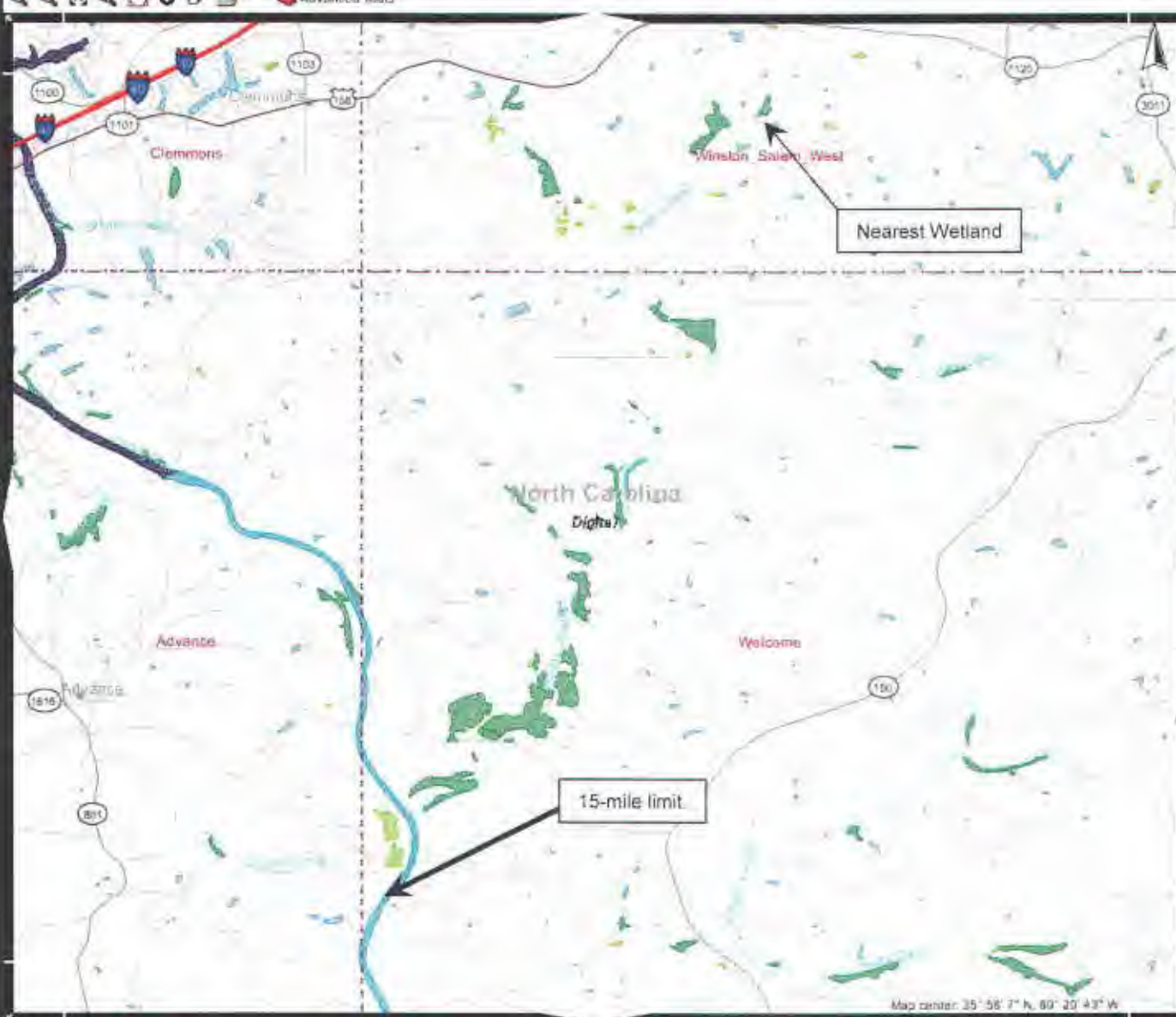
- Interstate
- Major Roads
- Other Road
- Interstate
- State highway
- US highway
- Roads
- Cities
- USGS Quad Index 24K
- Lower 48 Wetland Polygons
- Estuarine and Marine Deepwater
- Estuarine and Marine Wetland
- Freshwater Emergent Wetland
- Freshwater Forested/Shrub Wetland
- Freshwater Pond
- Lake
- Other
- Riversine
- Lower 48 Available Wetland Data
- Non-Digital
- Digital
- No Data
- Scan
- NHD Streams
- Counties 100K
- States 100K
- South America
- North America

Scale: 1:66,000 Map Tool: Pan Active Layer: Digital Wetland Polygons (Vector)

Powered by Geocortex

Done

start



Map Legend

Settings

- Interstate
- Major Roads
- Other Road
- Interstate
- State highway
- US highway
- Roads
- Cities
- USGS Quad Index 24K
- Lower 48 Wetland Polygons
- Estuarine and Marine Deepwater
- Estuarine and Marine Wetland
- Freshwater Emergent Wetland
- Freshwater Forested/Shrub Wetland
- Freshwater Pond
- Lake
- Other
- Riverine
- Lower 48 Available Wetland Data
- Non-Digital
- Digital
- No Data
- Scan
- NHD Streams
- Countries 100K
- States 100K
- South America
- North America

Scale: 1:66,000 [go](#) Map Tool: [Pan](#) Active Layer: Digital Wetland Polygons (Vector)

Done

Powered by [Geocortex](#)

REFERENCE 16

STORMWATER DISCHARGE OUTFALL (SDO) MONITORING REPORT

GENERAL PERMIT NO. NCG030000
CERTIFICATE OF COVERAGE NO. NCG03 030081

SAMPLES COLLECTED DURING CALENDAR YEAR: 2009
(This monitoring report is due at the Division no later than 30 days from the date the facility receives the sampling results from the laboratory.)

FACILITY NAME Douglas Battery Mfg. Co.
PERSON COLLECTING SAMPLES Charles Letterton
CERTIFIED LABORATORY Tu Test Lab # 103
Lab # 37731

COUNTY Forsyth
PHONE NO. (336) 650-7217

PLEASE SIGN ON THE REVERSE →

Part A: Specific Monitoring Requirements

Outfall No.	Date Sample Collected, mo/dd/yr	00530 Total Suspended Solids, mg/L	00400 pH, Standard units	01051 Lead, mg/L	00556 Oil and Grease, mg/L	78141 Total Toxic Organics ¹ , mg/L
Benchmark	-	100	Within 6.0 - 9.0	0.033	30	1
Inflow	4/20/09	202	7.02	0.078	9.8	na
Outfall	4/20/09	131	6.31	0.372	<5.0	na

Note: If you report a sampled value in excess of the benchmark value, or outside the benchmark range for pH, you must implement Tier 1 or Tier 2 responses. See General Permit text.

Did this facility perform Vehicle Maintenance Activities using more than 55 gallons of new motor oil per month? yes ☒ no
(if yes, complete Part B)

Part B: Vehicle Maintenance Activity Monitoring Requirements

Outfall No.	Date Sample Collected, mo/dd/yr	00556 Oil and Grease, mg/L	00530 Total Suspended Solids, mg/L	00400 pH, Standard units	New Motor Oil Usage, Annual average gal/mo
Benchmark	-	30	100	6.0 - 9.0	-

Note: If you report a sampled value in excess of the benchmark value, or outside the benchmark range for pH, you must implement Tier 1 or Tier 2 responses. See General Permit text.

STORM EVENT CHARACTERISTICS:

Date 4/20/09 (first event sampled)
Total Event Precipitation (inches): 0.41

Date _____ (list each additional event sampled this reporting period, and rainfall amount)

Total Event Precipitation (inches): _____

Mail Original and one copy to:
Division of Water Quality
Attn: DWQ Central Files
1617 Mail Service Center
Raleigh, North Carolina 27699-1617

Reference 16

**STORMWATER DISCHARGE OUTFALL (SDO)
MONITORING REPORT**

GENERAL PERMIT NO. NCG030000

CERTIFICATE OF COVERAGE NO. NCG03 030081

FACILITY NAME Douglas Battery Mfg. Co.

PERSON COLLECTING SAMPLES Charles Tetterton

CERTIFIED LABORATORY Tri Test Lab # 103

Lab # 37731

SAMPLES COLLECTED DURING CALENDAR YEAR: 2009

(This monitoring report is due at the Division no later than 30 days from the date the facility receives the sampling results from the laboratory.)

COUNTY Forsyth

PHONE NO. (336) 650-7217

PLEASE SIGN ON THE REVERSE →

Part A: Specific Monitoring Requirements

Outfall No.	Date Sample Collected, mo/dd/yr	00530 Total Suspended Solids, mg/L	00400 pH, Standard units	01051 Lead, mg/L	00556 Oil and Grease, mg/L	78141 Total Toxic Organics ¹ , mg/L
Benchmark	-	100	Within 6.0 - 9.0	0.033	30	1
Inflow	3/25/09	3	5.64	0.022	13.3	
Outfall	3/25/09	13	2.72	1.07	18.2	

Note: If you report a sampled value in excess of the benchmark value, or outside the benchmark range for pH, you must implement Tier 1 or Tier 2 responses. See General Permit text.

Did this facility perform Vehicle Maintenance Activities using more than 55 gallons of new motor oil per month? yes ☒ no
(if yes, complete Part B)

Part B: Vehicle Maintenance Activity Monitoring Requirements

Outfall No.	Date Sample Collected, mo/dd/yr	00556 Oil and Grease, mg/L	00530 Total Suspended Solids, mg/L	00400 pH, Standard units	New Motor Oil Usage, Annual average gal/mo
Benchmark	-	30	100	6.0 - 9.0	-

Note: If you report a sampled value in excess of the benchmark value, or outside the benchmark range for pH, you must implement Tier 1 or Tier 2 responses. See General Permit text.

STORM EVENT CHARACTERISTICS:

Date 3/25/09 (first event sampled)

Total Event Precipitation (inches): 0.1

Date _____ (list each additional event sampled this reporting period, and rainfall amount)

Total Event Precipitation (inches): _____

Mail Original and one copy to:

Division of Water Quality

Attn: DWQ Central Files

1617 Mail Service Center

Raleigh, North Carolina 27699-1617

**STORMWATER DISCHARGE OUTFALL (SDO)
MONITORING REPORT**

GENERAL PERMIT NO. NCG030000

CERTIFICATE OF COVERAGE NO. NCG03 030081

FACILITY NAME Douglas Battery Mfg. Co.

PERSON COLLECTING SAMPLES A. L. Csontos

CERTIFIED LABORATORY TriTest Lab # 103

Lab # 37731

SAMPLES COLLECTED DURING CALENDAR YEAR: 2009

(This monitoring report is due at the Division no later than 30 days from the date the facility receives the sampling results from the laboratory.)

COUNTY Forsyth

PHONE NO. (336) 650-7217

PLEASE SIGN ON THE REVERSE →

Part A: Specific Monitoring Requirements

Outfall No.	Date Sample Collected, mo/dd/yr	00530 Total Suspended Solids, mg/L	00400 pH, Standard units	01051 Lead, mg/L	00556 Oil and Grease, mg/L	78141 Total Toxic Organics ¹ , mg/L
Benchmark	-	100	Within 6.0 – 9.0	0.033	30	1
Inflow	2/11/09	111	6.09	0.228	8.1	
Outfall	2/11/09	122	6.63	2.18	8.6	

Note: If you report a sampled value in excess of the benchmark value, or outside the benchmark range for pH, you must implement Tier 1 or Tier 2 responses. See General Permit text.

Did this facility perform Vehicle Maintenance Activities using more than 55 gallons of new motor oil per month? ☐ yes ☒ no
(if yes, complete Part B)

Part B: Vehicle Maintenance Activity Monitoring Requirements

Outfall No.	Date Sample Collected, mo/dd/yr	00556 Oil and Grease, mg/L	00530 Total Suspended Solids, mg/L	00400 pH, Standard units	New Motor Oil Usage, Annual average gal/mo
Benchmark	-	30	100	6.0 – 9.0	-

Note: If you report a sampled value in excess of the benchmark value, or outside the benchmark range for pH, you must implement Tier 1 or Tier 2 responses. See General Permit text.

STORM EVENT CHARACTERISTICS:

Date 2/11/09 (first event sampled)
Total Event Precipitation (inches): 0.3

Date _____ (list each additional event sampled this reporting period, and rainfall amount)

Total Event Precipitation (inches): _____

Mail Original and one copy to:
Division of Water Quality
Attn: DWQ Central Files
1617 Mail Service Center
Raleigh, North Carolina 27699-1617

STORMWATER DISCHARGE OUTFALL (SDO) MONITORING REPORT

GENERAL PERMIT NO. NCG030000

CERTIFICATE OF COVERAGE NO. NCG03 030081

FACILITY NAME Douglas Battery Mfg. Co.

PERSON COLLECTING SAMPLES A.L. Csontos

CERTIFIED LABORATORY Tri Test Lab # 103
Lab # 37731

SAMPLES COLLECTED DURING CALENDAR YEAR: 2009

(This monitoring report is due at the Division no later than 30 days from the date the facility receives the sampling results from the laboratory.)

COUNTY Forsyth

PHONE NO. (336) 650-7217

PLEASE SIGN ON THE REVERSE →

Part A: Specific Monitoring Requirements

Outfall No.	Date Sample Collected, mo/dd/yr	00530 Total Suspended Solids, mg/L	00400 pH, Standard units	01051 Lead, mg/L	00556 Oil and Grease, mg/L	78141 Total Toxic Organics ¹ , mg/L
Benchmark	-	100	Within 6.0 - 9.0	0.033	30	1
Inflow	1/27/09	124	6.22	0.183	14.2	
Outfall	1/27/09	68	6.26	4.04	15.1	

Note: If you report a sampled value in excess of the benchmark value, or outside the benchmark range for pH, you must implement Tier 1 or Tier 2 responses. See General Permit text.

Did this facility perform Vehicle Maintenance Activities using more than 55 gallons of new motor oil per month? yes ☒ no
(if yes, complete Part B)

Part B: Vehicle Maintenance Activity Monitoring Requirements

Outfall No.	Date Sample Collected, mo/dd/yr	00556 Oil and Grease, mg/L	00530 Total Suspended Solids, mg/L	00400 pH, Standard units	New Motor Oil Usage, Annual average gal/mo
Benchmark	-	30	100	6.0 - 9.0	-

Note: If you report a sampled value in excess of the benchmark value, or outside the benchmark range for pH, you must implement Tier 1 or Tier 2 responses. See General Permit text.

STORM EVENT CHARACTERISTICS:

Date 1/27/09 (first event sampled)
Total Event Precipitation (inches): 0.3

Date _____ (list each additional event sampled this reporting period, and rainfall amount)

Total Event Precipitation (inches): _____

Mail Original and one copy to:
Division of Water Quality
Attn: DWQ Central Files
1617 Mail Service Center
Raleigh, North Carolina 27699-1617

**STORMWATER DISCHARGE OUTFALL (SDO)
MONITORING REPORT**

GENERAL PERMIT NO. NCG030000

CERTIFICATE OF COVERAGE NO. NCG03 030081

FACILITY NAME Douglas Battery Mfg. Co.

PERSON COLLECTING SAMPLES C. Studley

CERTIFIED LABORATORY TriTest Lab # 103
Lab # 37731

SAMPLES COLLECTED DURING CALENDAR YEAR: 2008
(This monitoring report is due at the Division no later than 30 days from the date the facility receives the sampling results from the laboratory.)

COUNTY Forsyth

PHONE NO. (336) 650-7217

PLEASE SIGN ON THE REVERSE →

Part A: Specific Monitoring Requirements

Outfall No.	Date Sample Collected, mo/dd/yr	00530 Total Suspended Solids, mg/L	00400 pH, Standard units	01051 Lead, mg/L	00556 Oil and Grease, mg/L	78141 Total Toxic Organics ¹ , mg/L
Benchmark	-	100	Within 6.0 - 9.0	0.033	30	1
In flow	12/10/08	58	5.41	0.130	7.7	
Outfall	12/10/08	74	4.49	2.46	7.3	

Note: If you report a sampled value in excess of the benchmark value, or outside the benchmark range for pH, you must implement Tier 1 or Tier 2 responses. See General Permit text.

Did this facility perform Vehicle Maintenance Activities using more than 55 gallons of new motor oil per month? yes ☒ no
(if yes, complete Part B)

Part B: Vehicle Maintenance Activity Monitoring Requirements

Outfall No.	Date Sample Collected, mo/dd/yr	00556 Oil and Grease, mg/L	00530 Total Suspended Solids, mg/L	00400 pH, Standard units	New Motor Oil Usage, Annual average gal/mo
Benchmark	-	30	100	6.0 - 9.0	-

Note: If you report a sampled value in excess of the benchmark value, or outside the benchmark range for pH, you must implement Tier 1 or Tier 2 responses. See General Permit text.

STORM EVENT CHARACTERISTICS:

Date 12/10/08 (first event sampled)
Total Event Precipitation (inches): 1.65

Date _____ (list each additional event sampled this reporting period, and rainfall amount)

Total Event Precipitation (inches): _____

Mail Original and one copy to:
Division of Water Quality
Attn: DWQ Central Files
1617 Mail Service Center
Raleigh, North Carolina 27699-1617

REFERENCE 17

October 2008

INACTIVE HAZARDOUS SITES BRANCH HEALTH-BASED SOIL REMEDIATION GOALS¹

These health-based remediation goals must be used in conjunction with either the REC or State-Lead Guidance documents and apply only at sites with signed administrative agreements with the Division of Waste Management. In addition to these health-based goals, soils must also meet protection of groundwater remediation goals. If sensitive environments are present at a site, the branch may require the adjustment of remediation goals and/or the proposed remedial alternative.

Contaminant	CASRN	Foot note	Csat (mg/kg)	RG (ppm) (mg/kg)	See footnote 8
Kerb	23950-58-5			9.20E+02	N
Lactofen	77501-63-4			2.40E+01	N
Lead Compounds					
Lead and Compounds	7439-92-1	5		4.00E+02	
Tetraethyl Lead	78-00-2			1.20E-03	N
Linuron	330-55-2			2.40E+01	N
Lithium Perchlorate	7791-03-9			1.10E+01	N
Londax	83055-99-6			2.40E+03	N
Malathion	121-75-5			2.40E+02	N
Maleic Anhydride	108-31-6			1.20E+03	N
Maleic Hydrazide	123-33-1			6.20E+03	N
Malononitrile	109-77-3			1.20E+00	N
Mancozeb	8018-01-7			3.60E+02	N
Maneb	12427-38-2			6.20E+01	N
Manganese (Water)	7439-96-5			3.60E+02	N
MCPA	94-74-6			6.20E+00	N
MCPB	94-81-5			1.20E+02	N
MCPP	03-65-2			1.20E+01	N
Mephosfolan	950-10-7			1.10E+00	N
Mepiquat Chloride	24307-26-4			3.60E+02	N
Mercury Compounds					
Mercuric Chloride	7487-94-7			4.60E+00	N
Mercuric Sulfide	1344-48-5			4.60E+00	N
Mercury (elemental)	7439-97-6	3	3.10E+00	1.30E+00	N
Mercury, Inorganic Salts	NA			4.60E+00	N
Methyl Mercury	22967-92-6			1.60E+00	N
Phenylmercuric Acetate	62-38-4			9.80E-01	N
Merphos	150-50-5			3.60E-01	N
Merphos Oxide	78-48-8			3.60E-01	N
Metalaxyl	57837-19-1			7.40E+02	N
Methacrylonitrile	126-98-7		4.50E+03	6.40E-01	N
Methamidophos	10265-92-6			6.20E-01	N
Methanol	67-56-1			6.20E+03	N
Methidathion	950-37-8			1.20E+01	N
Methomyl	16752-77-5			3.00E+02	N
Methoxy-5-nitroaniline, 2-	99-59-2			9.90E+00	C
Methoxychlor	72-43-5			6.20E+01	N
Methoxyethanol Acetate, 2-	110-49-6			2.40E+01	N
Methoxyethanol, 2-	109-86-4			3.60E+01	N
Methyl Acetate	79-20-9	3	2.90E+04	1.60E+04	N
Methyl Acrylate	96-33-3		6.90E+03	4.60E+02	N
Methyl Ethyl Ketone (2-Butanone)	78-93-3	3	2.80E+04	5.80E+03	N

REFERENCE 18

6-27-90
NFRAP

R-586-1-0-27

FINAL
ENVIRONMENTAL PRIORITIES INITIATIVE
PRELIMINARY ASSESSMENT OF
AT & T TECHNOLOGIES, INC.
3300 LEXINGTON ROAD
WINSTON-SALEM, FORSYTH COUNTY, NORTH CAROLINA
EPA ID NO. NCD003213907

Ind. Lex Rd P.H.

Prepared Under
TDD No. F4-8903-27
CONTRACT NO. 68-01-7346

Revision 0

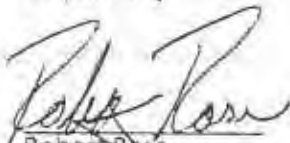
FOR THE

WASTE MANAGEMENT DIVISION
U.S. ENVIRONMENTAL PROTECTION AGENCY

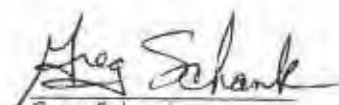
FEBRUARY 7, 1990

NUS CORPORATION
SUPERFUND DIVISION


Prepared By


Robert Rose
Project Manager

Reviewed By


Greg Schank
Assistant Regional
Project Manager

Approved By


Murray Warner, P.E.
Regional Project Manager

NOTICE

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EXECUTIVE SUMMARY

The AT & T Technologies facility is located in Winston-Salem, North Carolina. AT & T Technologies was previously known as Western Electric Company.

The company has been engaged in the manufacturing of printed wiring boards, tantalum capacitors and integrated circuits for telephone communications equipment since 1954 at the Winston-Salem location. The annual production rate was 8.8 million. AT & T has discontinued production and is presently attempting to sell the property.

During production, numerous solvents, oils and chemicals were used for the processing, cleaning, lubrication and manufacturing of the telephone equipment components. RCRA wastes generated included F001, F002, F003, F005, D001, D002 and D003 which were stored in drums. The tank units store F008 wastes. The company filed a RCRA Part A Hazardous Waste Permit Application for storage and treatment of the waste materials. Presently a RCRA operating permit to address the storage units is required in addition to a post-closure permit for its underground storage tanks.

Potable water supplies are provided to a population of 190,000 people by the Winston-Salem/Forsyth County Utilities Department. Water is drawn from the Yadkin River and Salem Lake Watershed. The nearest surface water intake to the site is 4 miles to the north-northeast (Salem Lake Watershed-Dam). Groundwater is not used for potable water supplies in the study area.

No critical habitats or endangered species exist along the surface water migration pathway.

The Visual Site Inspection (VSI) conducted during the investigation identified six Solid Waste Management Units (SWMUs) and one Area of Concern. The SWMUs included the oil house product storage area, aluminum scrap container, metal scrap container, trash compactor/roll-on-off dumpster, RCRA drum storage unit, and RCRA storage tank unit. The AOC was identified as the well drilling cuttings pile. The pile was formed during construction of the monitoring well system for monitoring the area where underground storage tanks were removed. Since the date of the VSI, the pile has been removed. Subsurface soil samples collected in the area where the tanks were removed revealed the presence of tetrachloroethene and trichloroethene. Further assessment (sampling and analysis) of the area where the drilling fines were piled is recommended.

1.0 INTRODUCTION

The NUS Corporation Region 4 Field Investigation Team (FIT) conducted a Preliminary Assessment (PA) and a Visual Site Inspection (VSI) at the AT & T Technologies site in Winston-Salem, North Carolina during May 11, 1989. The task was performed as a part of the Environmental Priorities Initiative (EPI) program as stated in Technical Directive Document (TDD) No. F4-8903-27.

1.1 OBJECTIVE

The major objective of the EPI program is to conduct an onsite and offsite inspection of the assigned facility in order to characterize the Solid Waste Management Units (SWMUs) associated releases and other Areas of Concern (AOCs). The inspection is conducted in a two-phase operation; the Preliminary Review, which includes the review and evaluation of specific file documents; and the Visual Site Inspection (VSI), which identifies all SWMUs, known releases, and AOCs.

1.2 SCOPE OF WORK

The scope of this investigation included the following activities:

- a file search of state and EPA files in an attempt to obtain and review specific documents (RCRA, CERCLA, AIR, and NPDES) that will help characterize the facility,
- development of a detailed site base map to scale showing site features, solid waste management unit locations, areas of concern, and photo-documentation areas,
- evaluation of target populations within a 3-mile radius from the site with regard to groundwater and air, and within a 15-mile stream distance for surface water,
- a private well survey within a 3-mile radius of the facility,

- inspection and photo-documentation of all Solid Waste Management Units (SWMUs) and related releases and exposure pathways, and
- inspection and photo-documentation of all Areas of Concern (AOC).

2.0 SITE DESCRIPTION

2.1 SITE LOCATION

The AT & T facility is located at 3300 Lexington Road, Winston-Salem, Forsyth County, North Carolina. The facility's latitude and longitude are 36°03'24" N and 80°13'45" W, respectively (Appendix B).

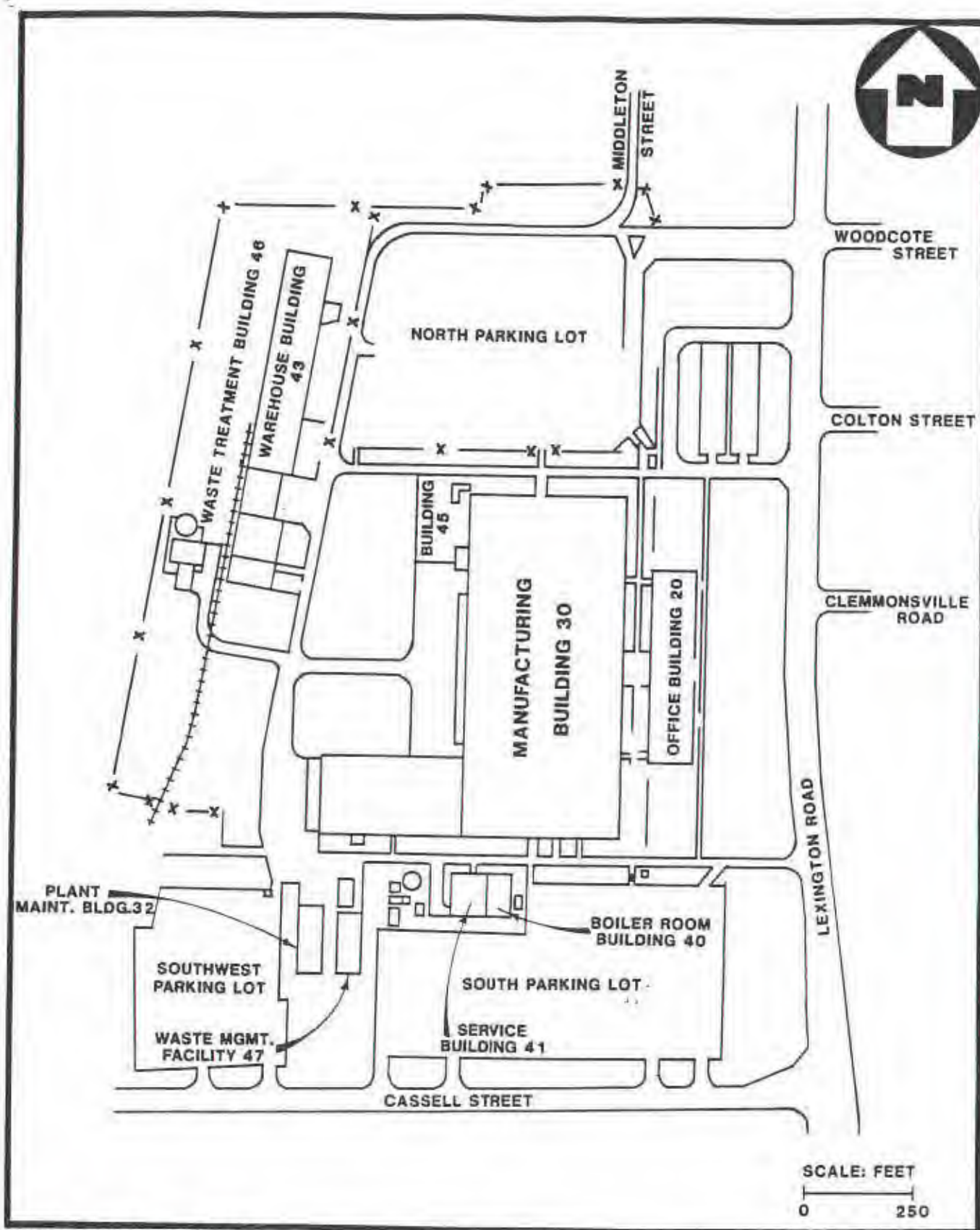
2.2 SITE FEATURES

The AT & T Lexington Road plant is a modern complex that is situated on approximately 80 acres of flat land. The main plant operations building is 865,000 square feet and is located along 2800 feet of property on Lexington Road. Additional structures on site are two adjacent manufacturing buildings, an office building, a service and warehouse building, a wastewater treatment plant, a boiler room building and covered drum storage and tank storage units (Ref. 1, Figure 2-1). The entire facility is surrounded by a chain-link fence with barbed wire and several access gates with guard houses.

To the west of the site is a railroad line with light industrial and manufacturing facilities. To the north of the facility, and adjacent to the railroad tracks there is a battery reclamation facility. East of the battery plant, and due north of the eastern portion of the AT & T site, is a residential area. To the east, across Lexington Road and upgradient of the site, is a mix of residential and commercial areas. To the south is a heavily wooded area (Ref. 1).

2.3 OWNERSHIP HISTORY

The Western Electric Company purchased several parcels of property during 1947 and constructed and began the manufacturing of telecommunication equipment during 1954. From 1954 thru 1962 Western Electric manufactured telephone equipment exclusively for the United States government under several contracts. From 1963 to the present the company has been manufacturing telecommunication equipment for the Bell Telephone System. The name of the company was changed to AT & T Technologies, Inc. during 1984 (Refs. 1, 2, 20).



SITE LAYOUT MAP
AT & T TECHNOLOGY
WINSTON SALEM - NORTH CAROLINA

FIGURE 2-1

2.4 NATURE OF OPERATIONS

The Western Electric Company/AT & T facility has been in the business of manufacturing components for local and long-distance telephone communications since August of 1954. The company manufactures printed wiring boards, tantalum capacitors and integrated circuits at an annual production rate of 8.8 million. AT & T has discontinued its production of telephone hardware components and presently has the property for sale. During this time, employment will be reduced to 200, with a further reduction to 50 personnel slated for June 1990. This small personnel force will maintain the facility until the plant is sold (Refs. 1, 3).

2.5 PERMIT AND REGULATORY HISTORY

The Western Electric Company (AT & T) filed a RCRA Part A Hazardous Waste Permit application on October 15, 1980. The company applied for interim status to operate a storage (SO2) and treatment unit (TO1). Wastes designated in the application for storage tank areas include F001, F002, F003, F005, and D001 hazardous wastes. For the treatment unit (TO1), F009, D002, and D003 RCRA waste types were designated (Ref. 4). The company submitted a revised Hazardous Waste Permit application on November 25, 1981, to address newly constructed management facilities. These included the addition of drum and tank storage facilities and solvent recovery system (Ref. 5).

A review of compliance inspection reports (July 27, 1987, and February 9, 1989), filed by the North Carolina Department of Human Resources, revealed that the company has been in compliance with the RCRA regulations applicable to generators and TSD facilities except for violations noted, which included container labeling and land ban notification. Additionally, the facility was cited for failure during July 1987 to demonstrate financial responsibility as required in Part 265 of the RCRA regulations (Refs. 6, 7, 8).

The Part B Hazardous Waste Permit application was submitted to the state of North Carolina on November 8, 1984, and additional information was submitted on March 18, 1985 (Ref. 9). The AT & T facility presently is in the process of selling its Lexington Road operations while permitting the RCRA storage facilities. A revised Part B application is due during 1990 to the State of North Carolina to address the RCRA-regulated units and address corrective actions required for the underground storage tank removal area (Ref. 10).

3.0 ENVIRONMENTAL SETTING

The Environmental Setting section, in addition to the Preliminary Assessment Form (Appendix A) and Topographic Map (Appendix B), provides information to evaluate the potential for a release to groundwater and surface water resources and other receptors.

3.1 WATER SUPPLY

Potable water is supplied to the city of Winston-Salem from the Yadkin River (60 percent) and the Salem Lake Watershed (40 percent). A total of 190,000 people are served by 77,000 connections including those residents within the study area around the AT & T facility. Water is supplied by the Forsyth County Water Department. The Yadkin River intake is located more than 15 miles south-southwest of the AT & T facility and upstream from Muddy Creek, which receives surface water drainage from the city of Winston-Salem. The Salem Lake Watershed and intake are located 4 miles north-northeast (upstream) of the plant (Refs. 1, 11).

No groundwater wells were identified in the study area. According to city department of public works personnel, groundwater is not used as a potable supply source in the greater Winston-Salem region (Ref. 11).

3.2 SURFACE WATER

The Yadkin River and Salem Lake Watershed are both used for fishing and limited "contact use". The Salem Lake Watershed covers approximately 16,000 acres and extends into the corporate limits of Kernersville and Walkertown, North Carolina (Ref. 11).

3.3 CLIMATOLOGICAL, METEOROLOGICAL, AND HYDROGEOLOGICAL FACTORS

Forsyth County topography is described as distinctly rolling county with variation in elevation (between 800 and 1,000 feet above mean sea level).

The climate of Forsyth County is warm and humid. The average annual temperature is 59.5°F. The average monthly temperature is 41°F in December and January, and 78°F in July (Ref. 12). Rainfall is

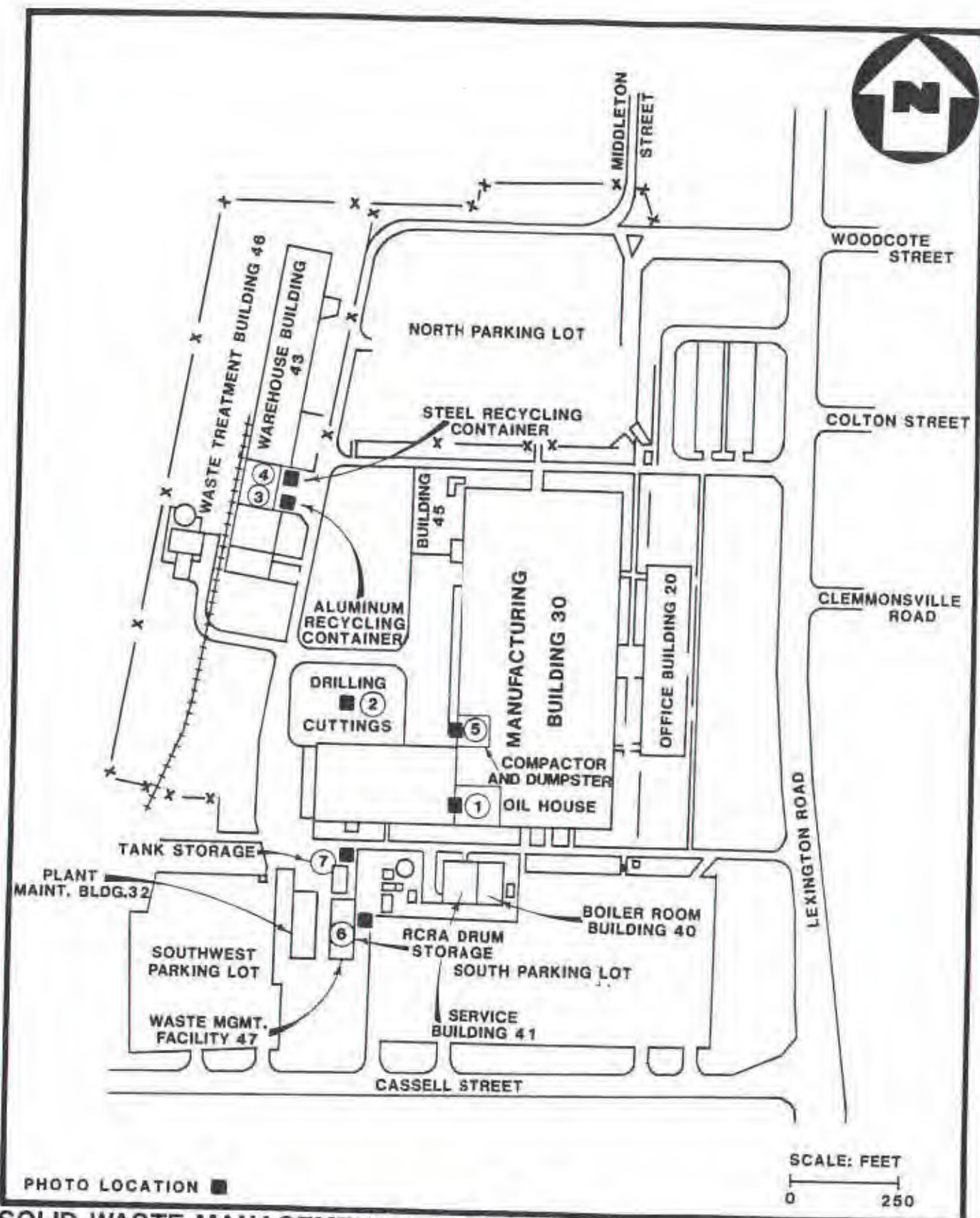
distributed fairly and evenly throughout the year. The average annual precipitation is 44 inches. Net annual precipitation amounts to 10 inches (precipitation minus evaporation) (Ref. 13).

AT & T is underlain by Pacelot Series soils. These soils were formed from the weathering of granite, mica gneiss, schist and other acidic rocks. The surface layer of this soil is a yellowish-brown, fine, sandy loam that is approximately 6 inches thick. The soil at the site is classified as Pacelot urban land complex. This class describes areas where Pacelot soils have been distributed by urban development (Ref. 13).

The facility is located in the Piedmont Physiographic Province. The underlying rock unit consists primarily of gneiss and saprolite (Ref. 14). The saprolite and the gneiss form a crystalline rock aquifer. Water is stored within the saprolite and the fractures that exist in the bedrock. The porosity of the bedrock is less than 1 percent and water is stored in joints, fractures and other secondary openings that have occurred (Ref. 15). Groundwater is unconfined in the saprolite and groundwater flow is controlled by local topographic gradients. Recharge occurs from infiltration of rainfall and groundwater discharge is into stream valleys and other topographically low areas (Ref. 16).

3.4 CRITICAL HABITATS/ENDANGERED SPECIES

There are no critical habitats identified in the watershed or area of the facility; however, several federally endangered species have been identified for general distribution in the entire state and in the central portion of the state of North Carolina. These species are respectively, the eastern cougar (Felis concolor cougar), bald eagle (Haliaeetus leucotecephalus), arctic peregrine falcon (Falco peregrines tundrus), and the Kirtland's warbler (Dendroica kirtlandii) (Ref. 17).



**SOLID WASTE MANAGEMENT / AREA OF
CONCERN / PHOTOGRAPH LOCATION MAP
AT & T TECHNOLOGY
WINSTON SALEM - NORTH CAROLINA**

FIGURE 4-1



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00	PRELIMINARY ASSESSMENT	L	S		12/04/1987
00	PRELIMINARY ASSESSMENT	N	F		08/21/1989
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Phone Number	Name	Title
(404) 562-8824	GIEZELLE BENNETT	Remedial Project Manager (RPM)
(404) 562-8820	JON BORNHOLM	Remedial Project Manager (RPM)
(404) 562-8807	Luis Flores	Remedial Project Manager (RPM)
(404) 562-8816	BEVERLY HUDSON	Remedial Project Manager (RPM)
(404) 562-8953	KEN LUCAS	Remedial Project Manager (RPM)
(404) 562-8802	KEN MALLARY	Remedial Project Manager (RPM)
(404) 562-8813	MICHAEL TOWNSEND	Remedial Project Manager (RPM)
(404) 562-8760	SAMANTHA UROUHART F	Remedial Project Manager (RPM)
(404) 562-8789	Phil Vorsatz	Remedial Project Manager (RPM)
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City / State / ZIP: WINSTON-SALEM, NC 27102

NPL Status: Not on the NPL

Non-NPL Status: Deferred to RCRA

EPA ID: NCD003213907

EPA Region: 04

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Federal Facility Flag: Not a Federal Facility

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